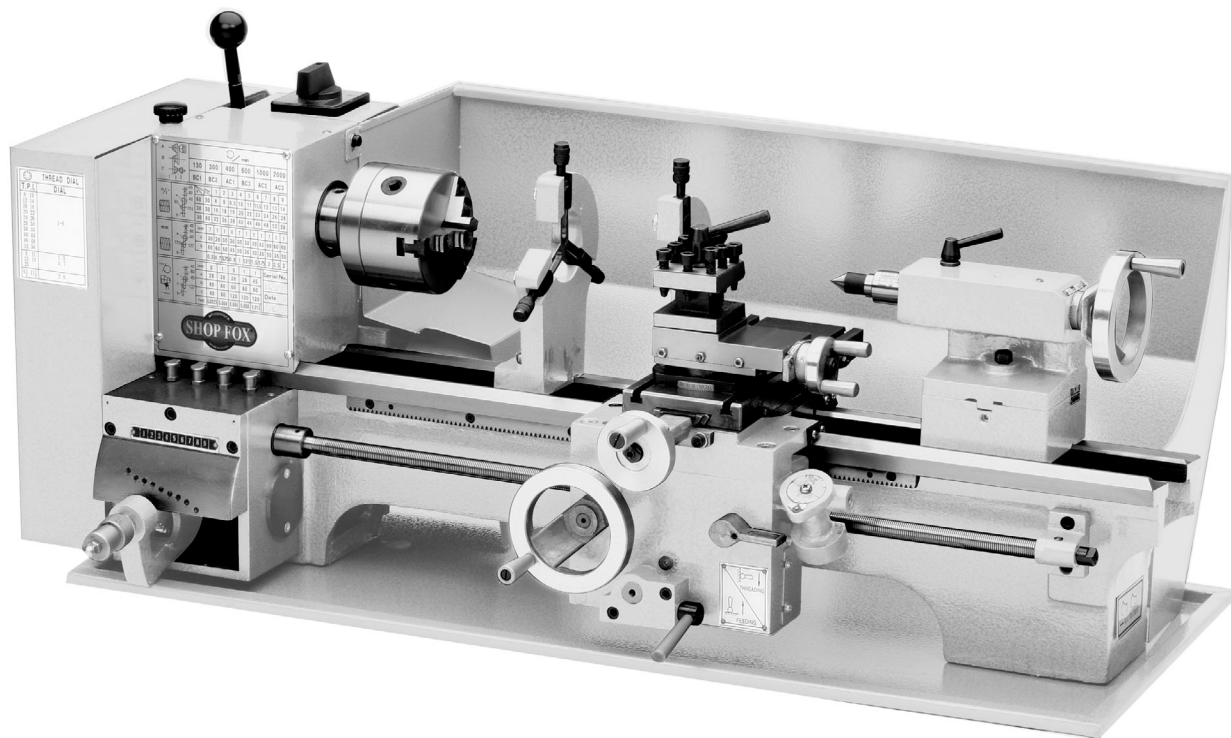




MODEL M1049 BENCHTOP LATHE



OWNER'S MANUAL

(FOR MODELS MANUFACTURED SINCE 8/09)

Phone: (360) 734-3482 • Online Technical Support: tech-support@shopfox.biz

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WARNING: NO PORTION OF THIS MANUAL MAY BE REPRODUCED IN ANY SHAPE OR FORM WITHOUT

THE WRITTEN APPROVAL OF WOODSTOCK INTERNATIONAL, INC.



WARNING!

This manual provides critical safety instructions on the proper setup, operation, maintenance, and service of this machine/tool. Save this document, refer to it often, and use it to instruct other operators.

Failure to read, understand and follow the instructions in this manual may result in fire or serious personal injury—including amputation, electrocution, or death.

The owner of this machine/tool is solely responsible for its safe use. This responsibility includes but is not limited to proper installation in a safe environment, personnel training and usage authorization, proper inspection and maintenance, manual availability and comprehension, application of safety devices, cutting/sanding/grinding tool integrity, and the usage of personal protective equipment.

The manufacturer will not be held liable for injury or property damage from negligence, improper training, machine modifications or misuse.



WARNING!

Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:

- Lead from lead-based paints.
- Crystalline silica from bricks, cement and other masonry products.
- Arsenic and chromium from chemically-treated lumber.

Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: Work in a well ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles.

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USE THE QUICK GUIDE PAGE LABELS TO SEARCH OUT INFORMATION FAST!

INTRODUCTION

Woodstock Technical Support

Your new **SHOP FOX®** Model M1049 Benchtop Lathe has been specially designed to provide many years of trouble-free service. Close attention to detail, ruggedly built parts and a rigid quality control program assure safe and reliable operation.

Woodstock International, Inc. is committed to customer satisfaction. Our intent with this manual is to include the basic information for safety, setup, operation, maintenance, and service of this product.

We stand behind our machines! In the event that questions arise about your machine, please contact Woodstock International Technical Support at (360) 734-3482 or send e-mail to: tech-support@shopfox.biz. Our knowledgeable staff will help you troubleshoot problems and process warranty claims.

If you need the latest edition of this manual, you can download it from <http://www.shopfox.biz>.
If you have comments about this manual, please contact us at:

**Woodstock International, Inc.
Attn: Technical Documentation Manager
P.O. Box 2309
Bellingham, WA 98227**



MACHINE SPECIFICATIONS



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MODEL M1049 9" X 19" BENCH LATHE

Motors

Main

Type..... Open Frame Capacitor Start Induction
Horsepower..... 3/4 HP
Voltage..... 110V
Phase..... Single-Phase
Amps..... 11.5A
Speed..... 1750 RPM
Cycle..... 60 Hz
Number of Speeds..... 1
Power Transfer Belt Drive to Gear
Bearings..... Shielded and Lubricated for Life

Main Specifications

Operation Info

Swing Over Bed..... 9 in.
Distance Between Centers..... 19 in.
Swing Over Cross Slide..... 5 in.
Swing Over Saddle..... 5 in.
Maximum Tool Bit Size..... 3/8 in.
Compound Travel..... 1-7/8 in.
Carriage Travel..... 16 in.
Cross Slide Travel..... 4-1/4 in.

Headstock Info

Spindle Bore..... 3/4 in.
Spindle Size..... 39 mm
Spindle Taper..... MT#3
Spindle Threads..... 4
Number of Spindle Speeds..... 6
Spindle Speeds..... 130, 300, 400, 600, 1000, 2000 RPM
Spindle Type..... Threaded
Spindle Bearings..... Tapered Roller

Tailstock Info

Tailstock Quill Travel..... 1-9/16 in.
Tailstock Taper..... MT#2
Tailstock Barrel Diameter..... 1.002 in.

Threading Info

Number of Longitudinal Feeds.....	18
Range of Longitudinal Feeds.....	0.0047 – 0.012 in.
Number of Inch Threads.....	27
Range of Inch Threads.....	8 – 56 TPI
Number of Metric Threads.....	11
Range of Metric Threads.....	0.5 – 3.0 mm

Dimensions

Bed Width.....	4-1/2 in.
Leadscrew Diameter.....	9/16 in.
Leadscrew TPI.....	16
Leadscrew Length.....	25 in.
Steady Rest Capacity.....	1-3/4 in.
Follow Rest Capacity.....	1-3/4 in.
Faceplate Size.....	7-1/2 in.
Floor to Center Height.....	41 in.

Construction

Base.....	Cast Iron
Headstock.....	Cast Iron
Headstock Gears.....	Cast Iron
Bed.....	Hardened Cast Iron
Body.....	Cast Iron
Paint.....	Epoxy

Other

Optional Stand.....	M1050
---------------------	-------

Product Dimensions

Weight.....	250 lbs.
Width (side-to-side) x Depth (front-to-back) x Height.....	37 x 20 x 15 in.
Footprint (Length x Width).....	37 x 16 in.

Shipping Dimensions

Type.....	Wood Crate
Content.....	Machine
Weight.....	293 lbs.
Length x Width x Height.....	41 x 22 x 20 in.

Electrical

Power Requirement.....	110V, Single-Phase, 60 Hz
Minimum Circuit Size.....	15A
Switch.....	Forward/Reverse
Switch Voltage.....	110V
Cord Length.....	6 ft.
Cord Gauge.....	12 Gauge
Plug Included.....	Yes
Included Plug Type.....	NEMA 5-15

Other

Country Of Origin	China
Warranty	2 Year
Serial Number Location	Bed Back, Right End

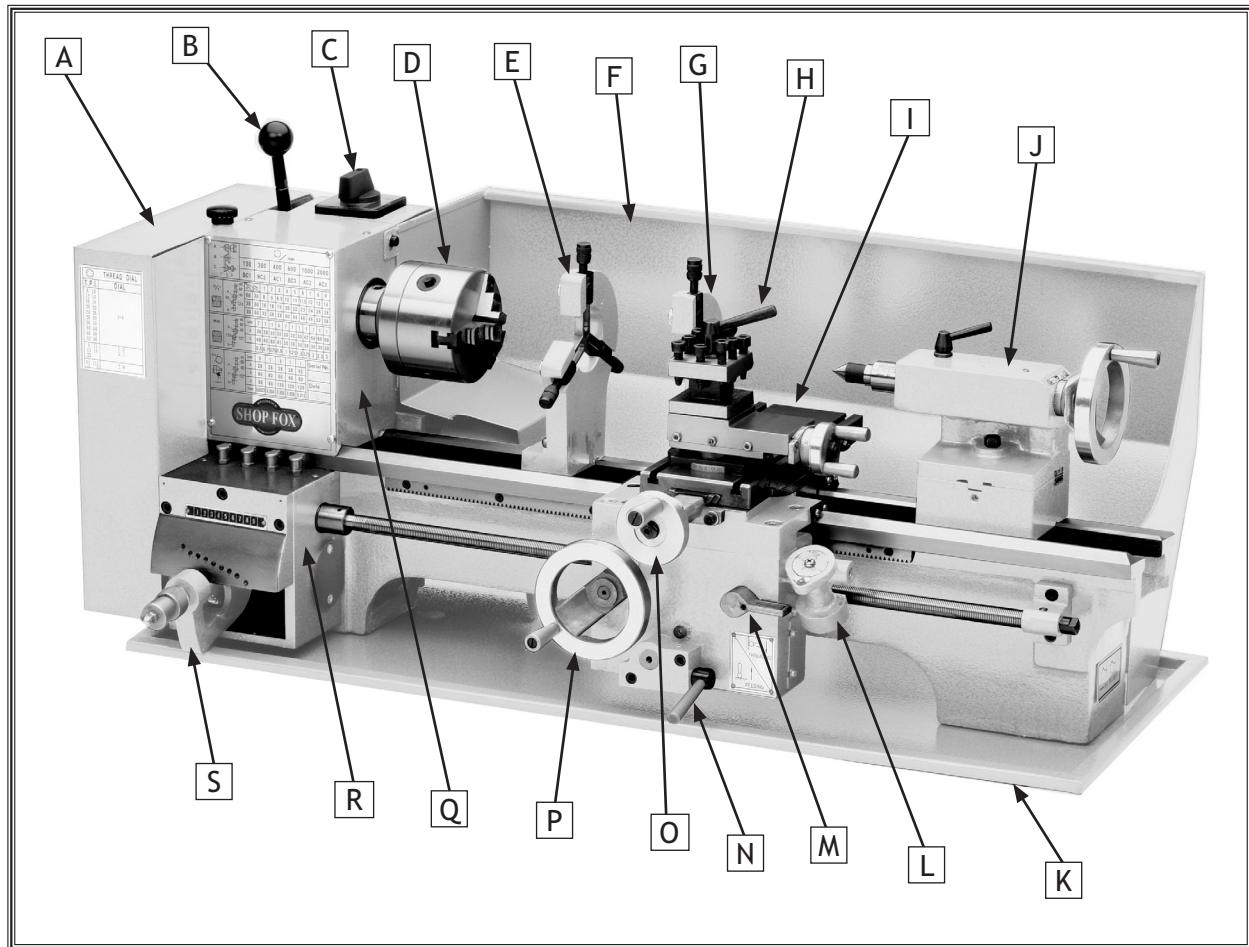
**Features**

Chip and Splash Guard Included
Hardened and Ground Cast Iron Bed
Quick Change Gearbox Offers up to 27 Standard and 11 Metric Threads, from 8 to 56 Threads Per Inch Threading Dial

Accessories

4 Way Tool Post
4" 3-Jaw Chuck with Two Sets of Jaws
7-1/4" 4-Jaw Chuck with Reversible Jaws
Extra C-Type Tool Post
Follow Rest
MT#2 Dead Center
MT#2 Live Center
MT#3 Dead Center
Steady Rest
Tool Box
Tool Kit
Faceplate

Controls and Features



Model M1049 Benchtop lathe.

- | | |
|--|--------------------------|
| A. Belt and Change Gear Access Door | K. Chip Tray |
| B. Belt Tension Lever | L. Thread Dial |
| C. ON/OFF and Spindle Direction Switch | M. Half Nut Lever |
| D. 3-Jaw Chuck | N. Apron Feed Lever |
| E. Steady Rest | O. Cross Slide Handwheel |
| F. Back Splash | P. Apron Handwheel |
| G. Follow Rest | Q. Headstock |
| H. 4-Way Tool Holder | R. Gearbox |
| I. Compound Rest | S. Gear Shift Lever |
| J. Tailstock | |

SAFETY

For Your Own Safety, Read Manual Before Operating Machine

The purpose of safety symbols is to attract your attention to possible hazardous conditions. This manual uses a series of symbols and signal words intended to convey the level of importance of the safety messages. The progression of symbols is described below. Remember that safety messages by themselves do not eliminate danger and are not a substitute for proper accident prevention measures—this responsibility is ultimately up to the operator!



Indicates an imminently hazardous situation which, if not avoided, **WILL** result in death or serious injury.



Indicates a potentially hazardous situation which, if not avoided, **COULD** result in death or serious injury.



Indicates a potentially hazardous situation which, if not avoided, **MAY** result in minor or moderate injury.

NOTICE

This symbol is used to alert the user to useful information about proper operation of the equipment, and/or a situation that may cause damage to the machinery.

Standard Machinery Safety Instructions

OWNER'S MANUAL. Read and understand this owner's manual **BEFORE** using machine. Untrained users can be seriously hurt.

EYE PROTECTION. Always wear ANSI-approved safety glasses or a face shield when operating or observing machinery to reduce the risk of eye injury or blindness from flying particles. Everyday eyeglasses are not approved safety glasses.

HAZARDOUS DUST. Dust created while using machinery may cause cancer, birth defects, or long-term respiratory damage. Be aware of dust hazards associated with workpiece materials, and always wear a NIOSH-approved respirator to reduce your risk.

WEARING PROPER APPAREL. Do not wear clothing, apparel, or jewelry that can become entangled in moving parts. Always tie back or cover long hair. Wear non-slip footwear to avoid accidental slips which could cause a loss of workpiece control.

HEARING PROTECTION. Always wear hearing protection when operating or observing loud machinery. Extended exposure to this noise without hearing protection can cause permanent hearing loss.

MENTAL ALERTNESS. Be mentally alert when running machinery. Never operate under the influence of drugs or alcohol, when tired, or when distracted.

DISCONNECTING POWER SUPPLY. Always disconnect machine from power supply before servicing, adjusting, or changing cutting tools (bits, blades, cutters, etc.). Make sure switch is in OFF position before reconnecting to avoid an unexpected or unintentional start.

DANGEROUS ENVIRONMENTS. Do not use machinery in wet or rainy locations, cluttered areas, around flammables, or in poorly-lit areas. Keep work area clean, dry, and well-lighted to minimize risk of injury.

APPROVED OPERATION. Untrained operators can be seriously hurt by machinery. Only allow trained or properly supervised people to use machine. When machine is not being used, disconnect power, remove switch keys, or lock-out machine to prevent unauthorized use—especially around children. Make workshop kid proof!

ONLY USE AS INTENDED. Only use machine for its intended purpose. Never modify or alter machine for a purpose not intended by the manufacturer or serious injury may result!

USE RECOMMENDED ACCESSORIES. Consult this owner's manual or the manufacturer for recommended accessories. Using improper accessories will increase the risk of serious injury.

CHILDREN & BYSTANDERS. Keep children and bystanders a safe distance away from work area. Stop using machine if children or bystanders become a distraction.

REMOVE ADJUSTING TOOLS. Never leave adjustment tools, chuck keys, wrenches, etc. in or on machine—especially near moving parts. Verify removal before starting!

SECURING WORKPIECE. When required, use clamps or vises to secure workpiece. A secured workpiece protects hands and frees both of them to operate the machine.

FEED DIRECTION. Unless otherwise noted, feed work against the rotation of blades or cutters. Feeding in the same direction of rotation may pull your hand into the cut.

GUARDS & COVERS. Guards and covers can protect you from accidental contact with moving parts or flying debris. Make sure they are properly installed, undamaged, and working correctly before using machine.

STABLE MACHINE. Unexpected movement during operations greatly increases the risk of injury and loss of control. Verify machines are stable/secure and mobile bases (if used) are locked before starting.

FORCING MACHINERY. Do not force machine. It will do the job safer and better at the rate for which it was designed.

AWKWARD POSITIONS. Keep proper footing and balance at all times when operating machine. Do not overreach! Avoid awkward hand positions that make workpiece control difficult or increase the risk of accidental injury.

UNATTENDED OPERATION. Never leave machine running while unattended. Turn machine off and ensure all moving parts completely stop before walking away.

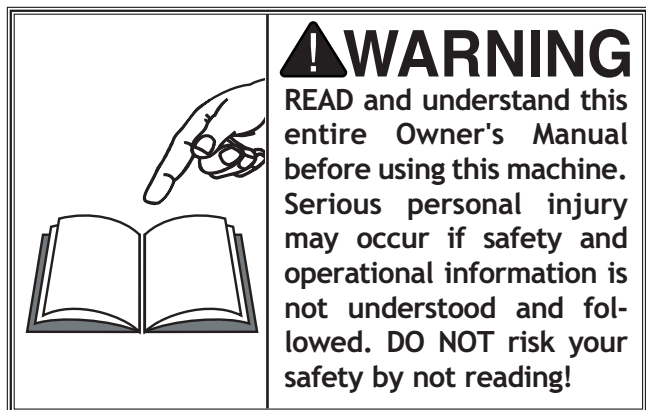
MAINTAIN WITH CARE. Follow all maintenance instructions and lubrication schedules to keep machine in good working condition. An improperly maintained machine may increase the risk of serious injury.

CHECK DAMAGED PARTS. Regularly inspect machine for damaged parts, loose bolts, mis-adjusted or mis-aligned parts, binding, or any other conditions that may affect safe operation. Always repair or replace damaged parts, wires, cords, or plugs before operating machine.

MAINTAIN POWER CORDS. When disconnecting cord-connected machines from power, grab and pull the plug—NOT the cord. Pulling the cord may damage the wires inside. Do not handle the cord/plug with wet hands. Avoid cord damage by keeping it away from heated surfaces, high traffic areas, harsh chemicals, and wet or damp locations.

EXPERIENCING DIFFICULTIES. If at any time you are experiencing difficulties performing the

Additional Safety Instructions for Lathes



1. **AVOIDING INJURY:** Read and understand this manual before operating this lathe.
2. **AVOIDING LACERATIONS AND ENTANGLEMENT:** Do not clear chips by hand. Use a brush, and never clear chips while the lathe is turning.
3. **USING CORRECT TOOLING:** Always select the right cutter for the job, and make sure cutters are sharp. The right tool decreases strain on the lathe components and provides a better finish.
4. **ELIMINATING A PROJECTILE HAZARD:** Always remove chuck key. Never walk away from the lathe with the key in the chuck.
5. **SECURING A WORKPIECE:** Make sure workpiece is properly held in chuck before starting lathe. A workpiece thrown from the chuck will cause severe injury.
6. **CHUCK SAFETY:** Chucks are surprisingly heavy and awkward to hold, so protect your hands and the lathe ways. Always use a chuck cradle or piece of plywood over the lathe ways.
7. **WORKPIECE SUPPORT:** Support a long workpiece if it extends from the headstock so it will not wobble violently when the lathe is turned on. When machining, a workpiece that extends more than 2.5 times its diameter must be supported by a center or steady rest.
8. **AVOIDING STARTUP INJURIES:** Make sure workpiece, cutting tool, and tool post have adequate clearance before starting lathe. Check chuck clearance and saddle clearance before starting the lathe. Make sure spindle RPM is set correctly for part diameter before starting the lathe. Large parts can be ejected from the chuck if the chuck speed is set too high.
9. **ELIMINATING A PROJECTILE HAZARD:** Always use the appropriate feed and speed rates.
10. **AVOIDING ENTANGLEMENT INJURIES:** Never attempt to slow or stop the lathe chuck by hand, and tie back long hair, ponytails, loose clothing, and sleeves so they do not dangle.
11. **MAINTAINING A SAFE WORKPLACE:** Never leave lathe unattended while it is running.
12. **PREVENTING AN APRON-CHUCK CRASH:** Always release automatic feeds after completing a job.

Avoiding Potential Injuries

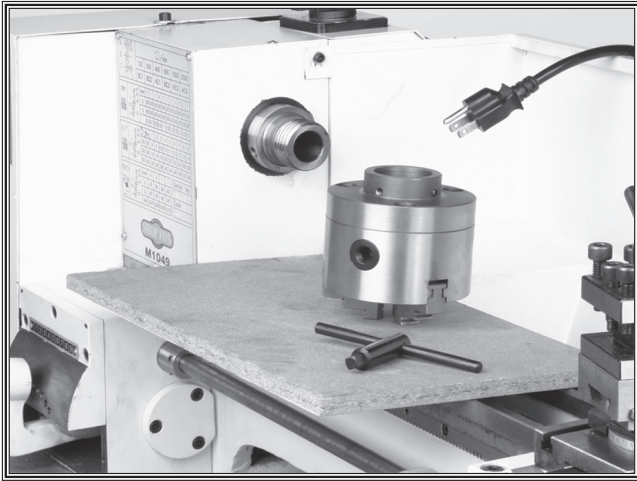


Figure 1. Always cover the bed ways, and unplug the benchtop lathe when retooling.

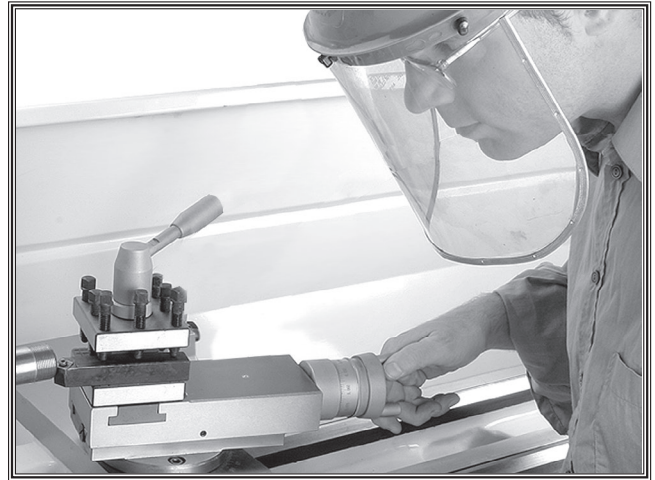


Figure 3. Always wear face and eye protection when using this benchtop lathe.



Figure 2. Never leave the chuck key inserted in the chuck.

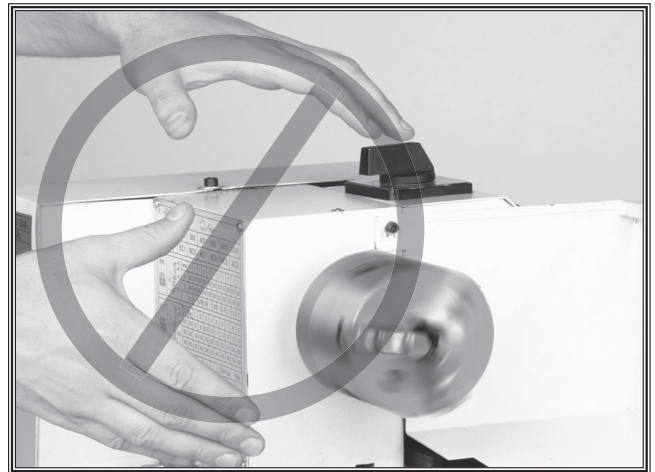


Figure 4. Never use hands to stop or slow the chuck when shutting down the benchtop lathe.

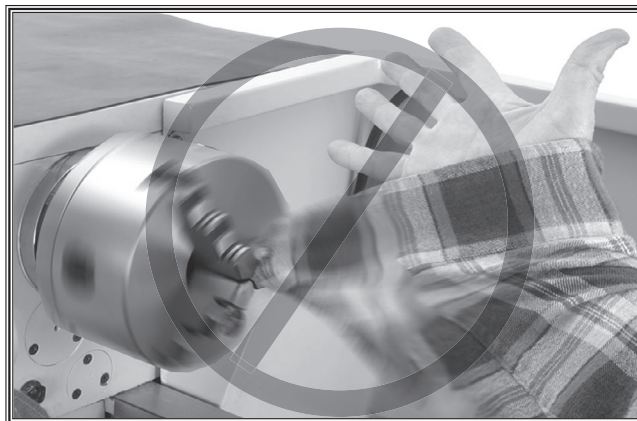


Figure 5. Never wear loose clothing or gloves when working with the benchtop lathe.

ELECTRICAL

Circuit Requirements

This machine must be connected to the correct size and type of power supply circuit, or fire or electrical damage may occur. Read through this section to determine if an adequate power supply circuit is available. If a correct circuit is not available, a qualified electrician **MUST** install one before you can connect the machine to power.

A power supply circuit includes all electrical equipment between the breaker box or fuse panel in the building and the machine. The power supply circuit used for this machine must be sized to safely handle the full-load current drawn from the machine for an extended period of time. (If this machine is connected to a circuit protected by fuses, use a time delay fuse marked D.)

Full-Load Current Rating

The full-load current rating is the amperage a machine draws at 100% of the rated output power. On machines with multiple motors, this is the amperage drawn by the largest motor or sum of all motors and electrical devices that might operate at one time during normal operations.

Full-Load Current Rating..... 11.5 Amps

Circuit Requirements for 110V

This machine is prewired to operate on a 110V power supply circuit that has a verified ground and meets the following requirements:

Circuit Type 110V/120V, 60 Hz, Single-Phase
Circuit Size 15 Amps
Plug/Receptacle NEMA 5-15

⚠ WARNING

The machine must be properly set up before it is safe to operate. **DO NOT** connect this machine to the power source until instructed to do later in this manual.

⚠ WARNING



Incorrectly wiring or grounding this machine can cause electrocution, fire, or machine damage. To reduce this risk, only a qualified electrician or service personnel should do any required electrical work for this machine.

NOTICE

The circuit requirements listed in this manual apply to a dedicated circuit—where only one machine will be running at a time. If this machine will be connected to a shared circuit where multiple machines will be running at the same time, consult a qualified electrician to ensure that the circuit is properly sized for safe operation.

Grounding Requirements

This machine **MUST** be grounded. In the event of certain types of malfunctions or breakdowns, grounding provides a path of least resistance for electric current to travel—in order to reduce the risk of electric shock.

Improper connection of the equipment-grounding wire will increase the risk of electric shock. The wire with green insulation (with/without yellow stripes) is the equipment-grounding wire. If repair or replacement of the power cord or plug is necessary, do not connect the equipment-grounding wire to a live (current carrying) terminal.

Check with a qualified electrician or service personnel if you do not understand these grounding requirements, or if you are in doubt about whether the tool is properly grounded. If you ever notice that a cord or plug is damaged or worn, disconnect it from power, and immediately replace it with a new one.

For 110V Connection

This machine is equipped with a power cord that has an equipment-grounding wire and a NEMA 5-15 grounding plug. The plug must only be inserted into a matching receptacle (see **Figure 6**) that is properly installed and grounded in accordance with local codes and ordinances.

Extension Cords

We do not recommend using an extension cord with this machine. Extension cords cause voltage drop, which may damage electrical components and shorten motor life. Voltage drop increases with longer extension cords and the gauge smaller gauge sizes (higher gauge numbers indicate smaller sizes).

Any extension cord used with this machine must contain a ground wire, match the required plug and receptacle, and meet the following requirements:

Minimum Gauge Size at 110V 14 AWG
Maximum Length (Shorter is Better)..... 50 ft.

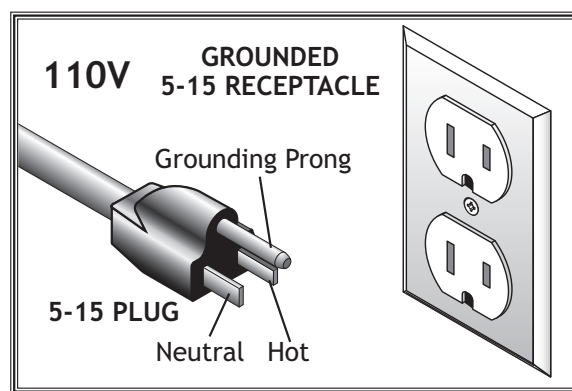


Figure 6. NEMA 5-15 plug & receptacle.

⚠ CAUTION

DO NOT modify the provided plug or use an adapter if the plug will not fit your receptacle. This is an indication that your power supply circuit does **NOT** meet the requirements for the machine; have an electrician install the correct power supply circuit. If the machine must be reconnected for use on a different type of electric circuit, the reconnection should be made by a qualified electrician or service personnel; after reconnection, the machine must comply with all local codes and ordinances.

SETUP

Inventory

The following is an inventory of the accessories shipped with your SHOP FOX® Model M1049 Benchtop lathe.

Installed Accessories (Figure 7)

	Qty
A. 4" Three-Jaw Chuck	1
B. 4-Way Tool Post	1
C. Compound Rest	1
D. Follow Rest	1

Packaged Accessories (Figure 8)

E. Toolbox	1
F. Oil Bottle	1
G. Three-Jaw Chuck Internal Jaws	3
H. Hex Wrench Set (6, 5, 4, 3, 2 mm)	1 EA
I. 7" Four-Jaw Universal Chuck	1
J. 7.5" Faceplate	1
K. Live Center MT#2	1
L. Dead Center MT#3	1
M. Dead Center MT#2	1
N. Wrench Set (8/10, 12/14 mm)	1 EA
O. Spindle Lever	1
P. Chuck Lever	1
Q. Male Knob M8-1.25	1
R. Four-Jaw Chuck Key	1
S. Universal Tool Post Kit	1
— Tool Clamp	1
— Base Plate	1
— Compression Spring	1
— Hex Bolt M8-1.25 x 30	1
— Special Hex Nut M8-1.25	1
— Flat Washer 8mm	1
— Dowel Pin 8 x 20mm	1
T. Three-Jaw Chuck Key	1
U. #2 Phillips Screwdriver	1
V. #2 Standard Screwdriver	1
W. Change Gear Set	1
— Change Gear (127-Tooth, Installed)	1
— Change Gear (120-Tooth, Installed)	1
— Change Gear (80-Tooth, One Installed)	2
— Change Gear (60-Tooth, Installed)	1
— Change Gear (45-Tooth)	1
— Change Gear (42-Tooth)	1
— Change Gear (40-Tooth, Installed)	1
— Change Gear (36-Tooth)	1
— Change Gear (30-Tooth)	2
— Change Gear (28-Tooth, Installed)	1

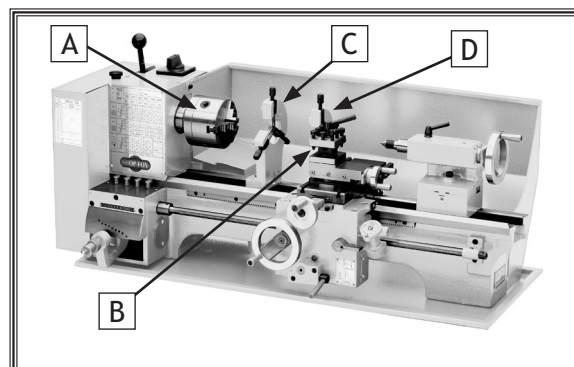


Figure 7. Installed accessories.

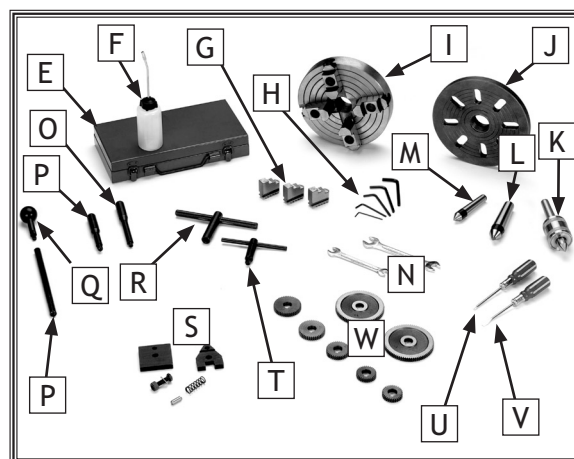


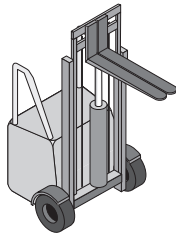
Figure 8. Packaged accessories.

NOTICE

If any parts are missing, find the part number in the back of this manual and contact Woodstock International, Inc. at (360) 734-3482 or at tech-support@shopfox.biz.


Machine Placement

- **Floor Load:** This machine distributes a heavy load in a small footprint. Some residential floors may require additional bracing to support both machine and operator.
- **Working Clearances:** Consider existing and anticipated needs, size of material to be processed through the machine, and space for auxiliary stands, work tables or other machinery when establishing a location for your Machine Type.
- **Lighting:** Lighting should be bright enough to eliminate shadow and prevent eye strain.
- **Electrical:** Electrical circuits must be dedicated or large enough to handle amperage requirements. Outlets must be located near each machine, so power or extension cords are clear of high-traffic areas. Follow local electrical codes for proper installation of new lighting, outlets, or circuits.



! WARNING

USE helpers or power lifting equipment to lift this Machine Name. Otherwise, serious personal injury may occur.




! CAUTION

MAKE your shop "child safe." Ensure that your workplace is inaccessible to children by closing and locking all entrances when you are away. NEVER allow untrained visitors in your shop when assembling, adjusting or operating equipment.

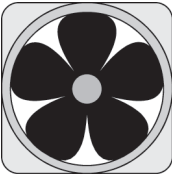


Cleaning Machine

The table and other unpainted parts of your lathe are coated with a waxy grease that protects them from corrosion during shipment. Clean this grease off with a solvent cleaner or citrus-based degreaser. DO NOT use chlorine-based solvents such as brake parts cleaner or acetone—if you happen to splash some onto a painted surface, you will ruin the finish.



! WARNING

NEVER clean with gasoline or other petroleum-based solvents. Most have low flash points, which make them extremely flammable. A risk of explosion and burning exists if these products are used. Serious personal injury may occur if this warning is ignored!

! CAUTION

ALWAYS work in well-ventilated areas far from possible ignition sources when using solvents to clean machinery. Many solvents are toxic when inhaled or ingested. Use care when disposing of waste rags and towels to be sure they DO NOT create fire or environmental hazards.

Uncrating & Lifting

This benchtop lathe has been carefully crated. If you notice it has been damaged, contact your authorized SHOP FOX® dealer immediately.

To unpack and move the benchtop lathe, do these steps:

1. Remove the crate sides.
2. Unbolt the benchtop lathe from the pallet.
3. Place the chip tray onto the workbench surface and align the holes.

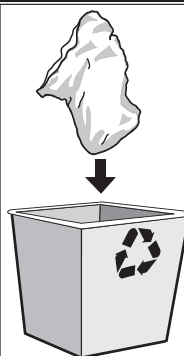
Note: *If you anticipate using oils or cutting fluid for lathe operations, use a silicone sealer to seal the chip tray mounting holes.*

4. With lifting assistance place the lathe on the chip tray and align the mounting holes.
5. With the benchtop lathe securely resting on the chip tray and bench top, adjust the workbench feet as required to make the ways level at all four corner locations as indicated with a machinist's level.
6. Secure the lathe to the workbench with two appropriate length fasteners, nuts, and washers. Do not overtighten the fasteners.
7. Recheck the ways to make sure they are still level, re-adjust the workbench for feet as required.

WARNING



The Model M1049 weighs approximately 250 lbs. You will need lifting assistance to remove this machine from the pallet and position it. Ignoring this warning may lead to serious personal injury.



WARNING

SUFFOCATION HAZARD!

Immediately discard all plastic bags and packing materials to eliminate choking/suffocation hazards for children and animals.

Test Run and Break-In

The purpose of the test run is to make sure the benchtop lathe and safety features operate correctly before proceeding with additional setup.

To begin the test run procedure, do these steps:

1. Make sure the benchtop lathe is lubricated. Refer to **Page 34** if required.
2. Make sure the chuck is threaded onto the spindle tightly and the two set screws are tight. Refer to **Chuck and Faceplate Mounting on Page 19** for details.
3. Before starting the lathe, make sure the lathe is properly grounded and the power and directional switch is in the OFF position.
4. Inspect the machine to ensure that all hand tools are out of the way, guards are in place, and nothing is impeding the movement of the chuck.
5. Push both the half-nut lever and the feed lever down to disengage the apron (see **Figure 9**).
6. Move the power switch shown in **Figure 10** to the 1 or 2 position. The chuck should rotate.
 - If you hear squealing or grinding noises, turn the machine OFF immediately and correct any problem before further operation.
 - If the problem is not readily apparent, refer to **Troubleshooting on Page 40**.

NOTICE

Make sure all power feed levers are disengaged before starting the benchtop lathe! Thoroughly familiarize yourself with all the controls and their functions before using any power feed! **NEVER SHIFT Benchtop lathe GEARS WHEN MACHINE IS OPERATING.**

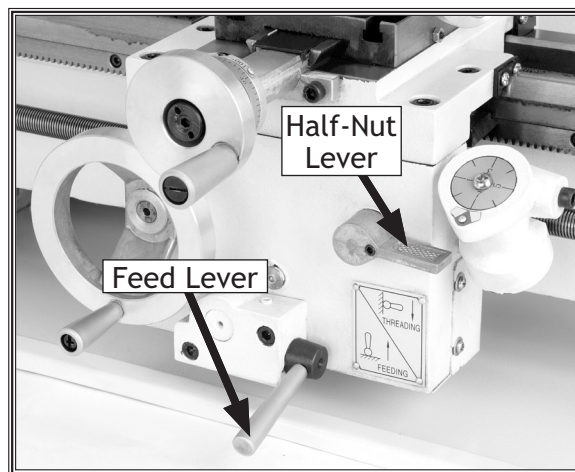


Figure 9. Apron control levers.



Figure 10. Power switch in the OFF position.

LATHE OPERATIONS

General

The Model M1049 will perform many types of operations that are beyond the scope of this manual. Many of these operations can be dangerous or deadly if performed incorrectly.

The instructions in this section are written with the understanding that the operator has the necessary knowledge and skills to operate this machine. **If at any time you are experiencing difficulties performing any operation, stop using the machine!**

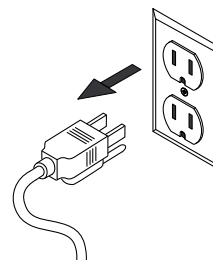
If you are an inexperienced operator, we strongly recommend that you read books, trade articles, or seek training from an experienced benchtop lathe operator before performing any unfamiliar operations. **Above all, your safety should come first!**

! WARNING



Always wear safety glasses when operating this benchtop lathe. Failure to comply may result in serious eye injury causing blindness.

! WARNING



UNPLUG this lathe so no power is available to the motor or controls, and make sure the spindle is stopped before proceeding with any adjustments or maintenance. Failure to comply may result in serious personal injury or death.

Chuck and Faceplate Mounting

The three-jaw scroll chuck has hardened steel jaws that self-center the workpiece. An extra set of jaws is included for machining larger workpieces.

The four-jaw chuck also has hardened steel jaws but are adjusted independently to hold an off-center workpiece. Each jaw can be removed from the chuck body and reversed for special clamping applications.

The cast-iron faceplate has slots for T-bolts that hold clamping fixtures. This face plate and aftermarket clamping hardware will hold non-cylindrical parts such as castings for many types of turning operations.

Both chucks and the faceplate are removed and installed the same way.

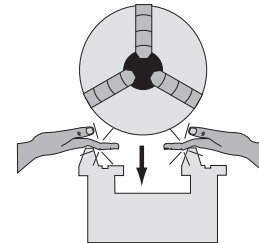
To remove and install the chuck or face plate, do these steps:

1. DISCONNECT POWER TO THE LATHE!
2. Lay a piece of plywood over the bedways to protect the precision-ground bedways.
3. Use a 2mm hex wrench and loosen the two chuck retaining set screws shown in **Figure 11**.
4. Use spindle and chuck levers to loosen the chuck from the spindle as shown in **Figure 12**.

Note: The chuck and spindle are right-hand thread.

5. Support the chuck, and while anticipating its weight, unscrew the chuck counterclockwise and set it aside.
6. Clean the threads on the spindle and the new chuck or faceplate with a clean rag and oil the threads.
7. Thread the chuck or faceplate onto the spindle and tighten in place with the levers.
8. Tighten the two setscrews.

WARNING



PINCH HAZARD! Protect your hands and precision ground bedways with plywood when removing benchtop lathe chuck! The heavy weight of a falling chuck can cause serious injury.

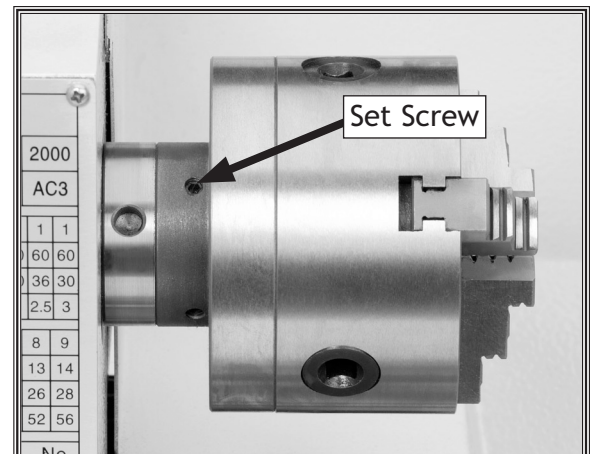


Figure 11. Chuck retaining setscrew.

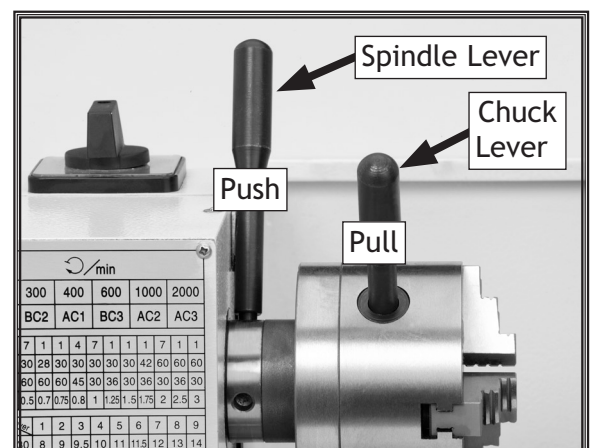


Figure 12. Chuck removal levers.

Replacing Jaws

The three-jaw scroll chuck has removable hardened steel jaws (**Figure 13**). The outside of the jaws are used to hold the workpiece from the outer diameter.

Numbered from 1-3, the jaws must be used in the matching numbered jaw guides, see **Figure 14**.

Note: *The chuck need not be removed from the spindle to swap the jaws.*

To remove a set of jaws, do these steps:

1. DISCONNECT POWER TO THE LATHE!
2. Place a piece of wood over the ways to protect them from potential damage.
3. Turn the chuck key counterclockwise and back the jaws out.
4. Clean the jaw mating surfaces and apply a film of white lithium grease to the mating surfaces.
5. Set the old jaws aside in a safe place free of moisture and abrasives.
6. Rotate the chuck key clockwise until you see the tip of the scroll-gear lead thread just begin to enter jaw guide #1 (see **Figure 15**).
7. Insert jaw #1 into jaw guide #1 and hold the jaw against the scroll gear.
8. Rotate the chuck key clockwise one turn to engage the tip of the scroll-gear lead thread into the jaw. Pull on the jaw now and it should be locked into the jaw guide.
9. Repeat the steps on the remaining jaws.
 - If installed correctly, all three jaws will converge together at the center of the chuck.
 - If the jaws do not come together, repeat this procedure until they do.

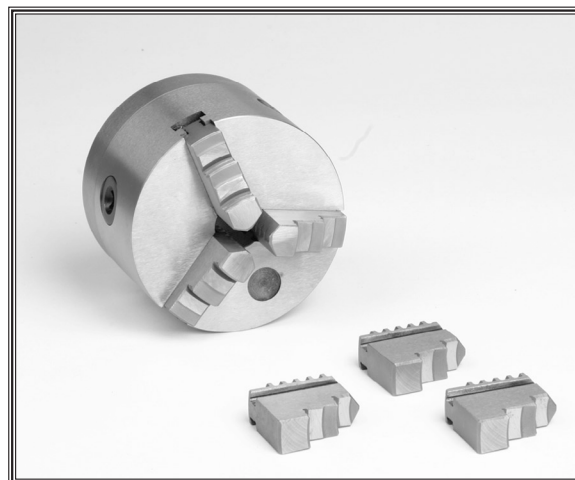


Figure 13. Chuck and jaw selection.

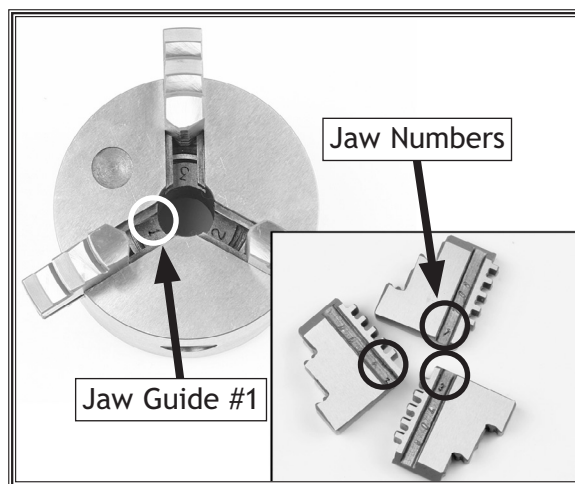


Figure 14. Jaw guide number.

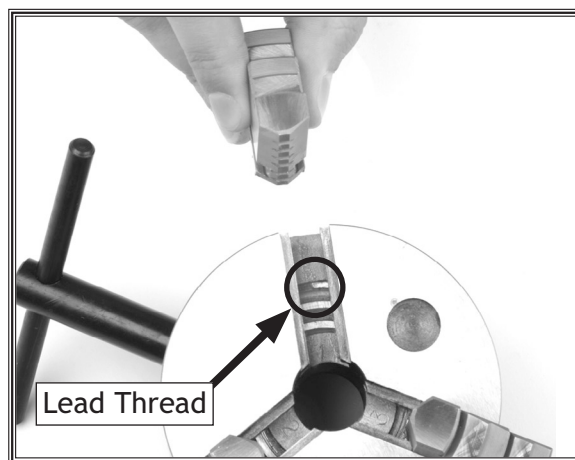


Figure 15. Lead thread on scroll gear.

Using the Four-Jaw Chuck

To install the four-jaw chuck, do these steps:

Refer to the Chuck and Face Plate Mounting procedures on **Page 19** to mount the four-jaw chuck.

To load a workpiece in the four-jaw chuck, do these steps:

1. Using the chuck key, open each jaw so the workpiece will lay flat against the chuck face and will be roughly centered.
2. Support the workpiece in the center of the chuck as best as you can by eye.
3. Turn each jaw until it just makes contact with the workpiece.
4. While measuring with a dial indicator (see **Figure 16**), and rotating the chuck by hand, make fine centering adjustments by slightly loosening one jaw and tightening the opposing jaw until the workpiece is precisely aligned.
5. Use a lower RPM when machining heavy eccentric workpieces.

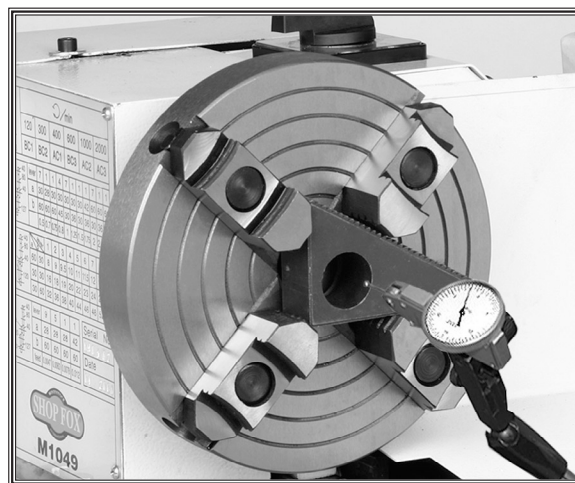
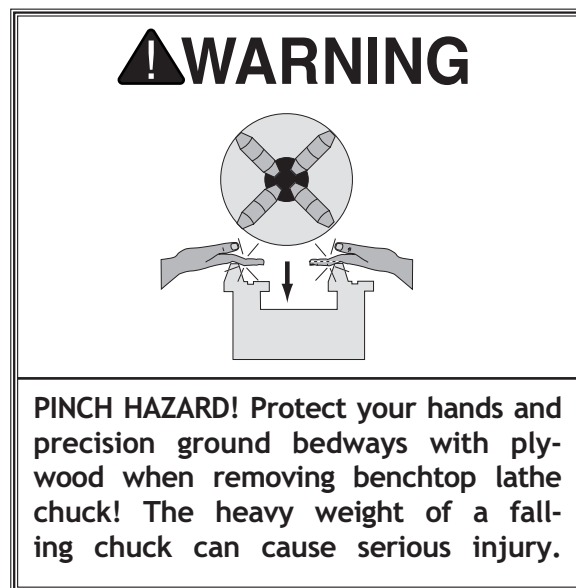
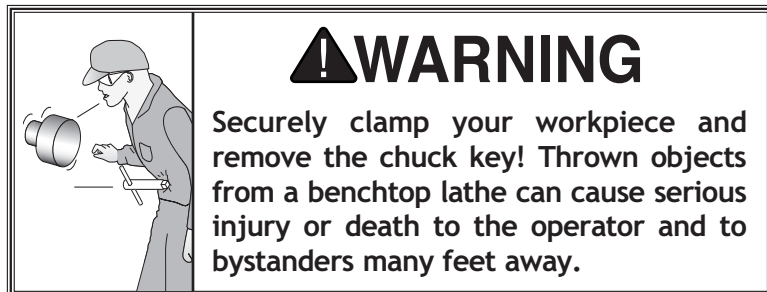


Figure 16. Centering workpiece.

Using the Faceplate

The faceplate can be used to turn non-cylindrical parts or for off-center turning by clamping the workpiece to the faceplate.

Note: The included MT#3 dead center will fit into the spindle bore with the face plate already installed.

To install the faceplate, do these steps:

Refer to the **Chuck and Face Plate Mounting** procedures on **Page 19** to mount the four-jaw chuck.

To load a workpiece, do these steps:

1. Support the workpiece.
2. Slide the tailstock to the workpiece.
3. Lock the tailstock and then turn the tailstock quill so the dead center makes contact with the center point of your workpiece.
4. Lock the tailstock quill when sufficient pressure is applied to hold the workpiece in place.

Note: Depending on the workpiece, some additional support may be needed such as a custom fixture or jig that can hold the workpiece from ejecting from the chuck.

5. Secure the workpiece with a minimum of three independent clamping devices. Failure to follow this step may lead to deadly injury to yourself or bystanders. Take into account rotation and the cutting forces applied to the workpiece when clamping to the faceplate. **Make sure your clamping application will not fail!**
6. Use a lower RPM when machining heavy eccentric workpieces.

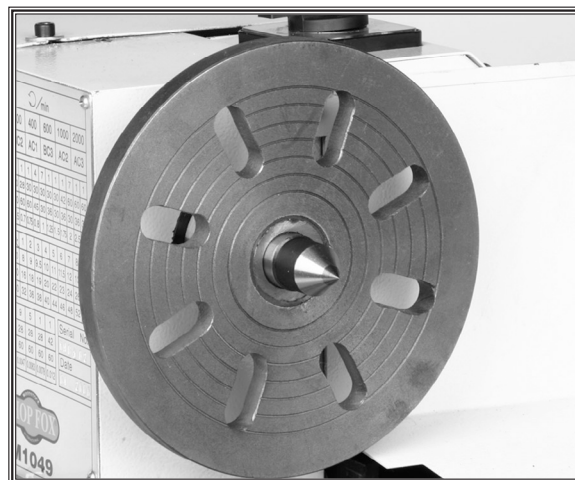
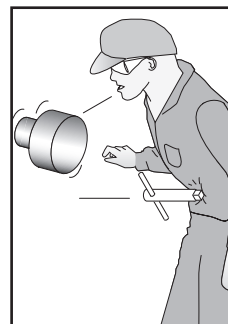


Figure 17. Faceplate installed.

WARNING

Use a minimum of three independent clamping devices when turning eccentric workpieces. Failure to provide adequate clamping will cause workpiece to eject.

WARNING



Securely clamp your workpiece and remove the chuck key! Thrown objects from a benchtop lathe can cause serious injury or death to the operator and to bystanders many feet away.

Using the Tailstock

The tailstock (**Figure 18**) can be used to support workpieces with the use of a live or dead center. Using an MT#2 drill chuck and a drill bit, the lathe can drill or bore holes in the center of a part. The tailstock can also be offset for cutting shallow tapers.

To use the tailstock, do these steps:

1. Slide the tailstock to the desired position.
2. Tighten the tailstock lock nut to lock the tailstock in place on the ways.
3. With the tailstock locked, turn the quill lock lever to unlock the quill.
4. Turn the quill feed handle clockwise to feed/move the quill towards the spindle, or counterclockwise to move away from the spindle.
5. Turn the quill lock lever to lock the quill in place.

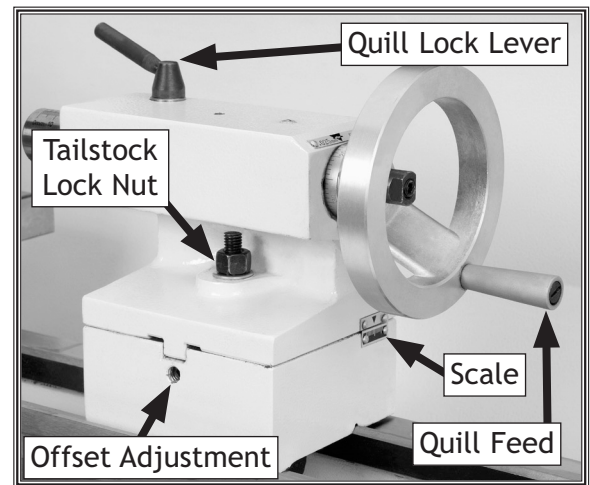


Figure 18. Tailstock controls.

Cutting Shallow Tapers with the Tailstock

To setup the tailstock to cut tapers, do these steps:

1. Lock the tailstock in position.
2. Alternately loosen and tighten the left and right offset adjustment screws until the desired offset is indicated on the scale (see Figure 19).
3. Retighten the lock screw.

Note: To return the tailstock back to the original position, repeat the process until the centered position is indicated on the scale.

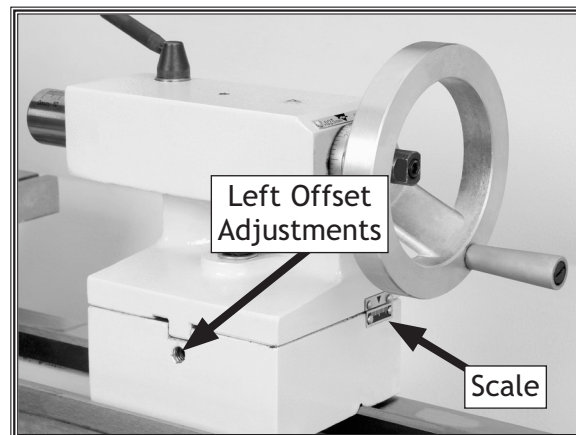


Figure 19. Left offset adjustment.

Tailstock Alignment

The tailstock is aligned at the factory with the headstock. We recommend that you take the time to ensure that the tailstock is aligned to your own desired tolerances.

To align the tailstock, do these steps:

1. Get two pieces of steel round stock, two inches in diameter and six inches long.
2. Center drill both ends of one piece of the round stock.
3. Using the other piece of stock, make a dead center by turning a shoulder to make a shank. Flip the piece over in the chuck and turn a 60° point (see Figure 20).

Note: As long as the dead center remains in the chuck, the point of your center will remain true to the spindle axis. Keep in mind that the point will have to be refinished whenever it is removed and returned to the chuck.

4. Place the live center in the tailstock.
5. Attach a lathe dog to the bar stock and mount it between centers.
6. Turn approximately 0.010" off the diameter.

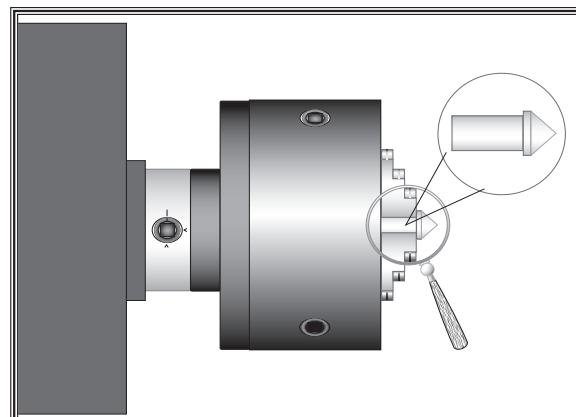


Figure 20. Tailstock centering dead center.

7. Measure the stock with a micrometer.
 - If the stock diameter is thicker at the tailstock end, the tailstock needs to be moved toward you half the distance of the amount of the taper (see **Figure 21**).
 - If the stock diameter is thinner at the tailstock end, the tailstock needs to be moved away from you half the distance of the amount of the taper (see **Figure 22**).
8. Mount a dial indicator so the dial plunger is on the tailstock barrel before making adjustments to the tailstock.
9. Turn another 0.010" off of the diameter and check for a taper. Repeat this process as necessary until the desired amount of accuracy is achieved.

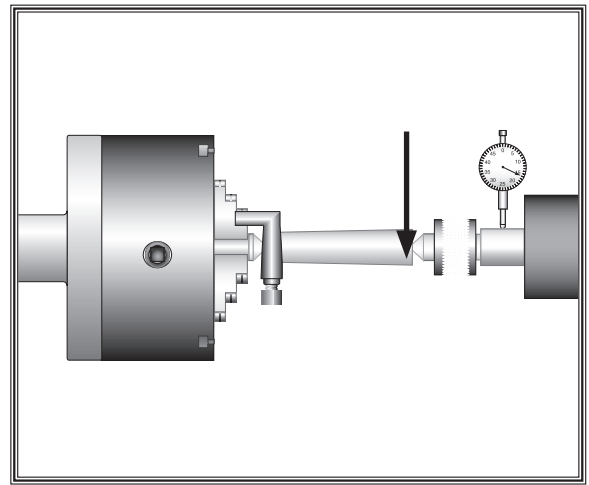


Figure 21. Tailstock adjustment option #1.

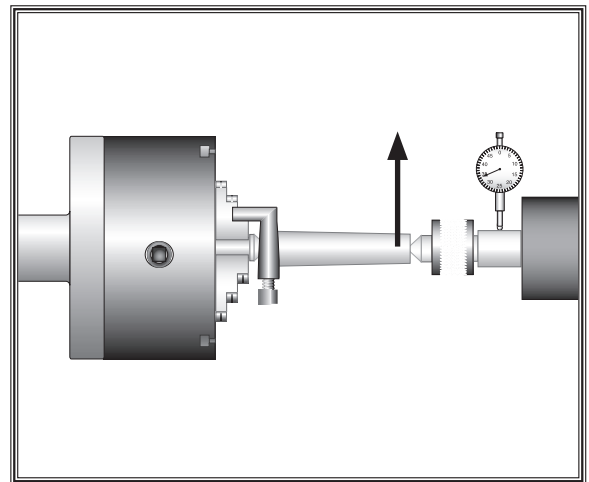


Figure 22. Tailstock adjustment option #2.

Using Centers

The MT#2 dead center is used in the tailstock, and the MT#3 in the lathe spindle. When used in the tailstock, make sure to keep the dead center tip and workpiece lubricated to prevent tip galling.

To install a dead or live center into the tailstock, do these steps:

1. Feed the quill out about 1" and insert the dead center (**Figure 23**). The mating tapers provide the locking action.
2. Move the tailstock into position and lock the tailstock in place.
3. Feed the quill into the workpiece.

Note: Make sure there is a center drilled hole in the end of the workpiece for the dead center.

4. Lock the quill into place once the live center and the part rotate together.

Note: The quill may need to be adjusted during operation.

5. To remove the dead center, retract the quill until the dead center pops free.

To install a MT#5 dead center into the spindle, do these steps:

1. Remove the chuck from the spindle.
2. Make sure all mating surfaces are clean and are wiped with a thin coat of oil.
3. Install the dead center in the spindle.
4. Attach the faceplate to the spindle.

Note: When using the dead center in the spindle, use a lathe dog so that your part will rotate with the spindle and not spin on the dead center tip.

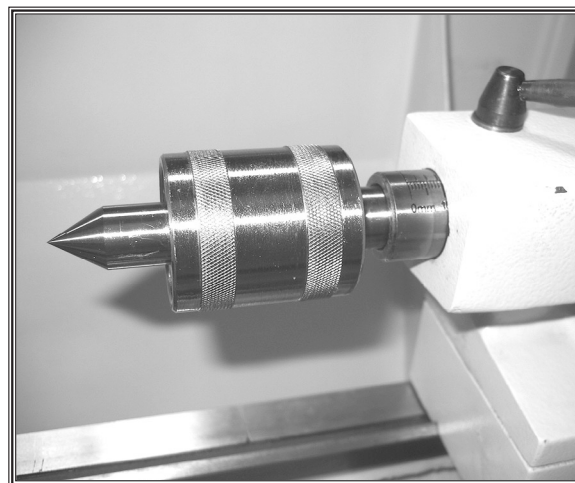


Figure 23. Live center installed.



Figure 24. Faceplate and dead center installed.

NOTICE

Failure to keep dead center point well lubricated will gall the dead center and workpiece.

Using the Steady Rest

The steady rest serves as a support for long shafts. The steady rest can be placed anywhere along the length of the ways.

To use the steady rest, do these steps:

1. Carefully place the steady rest on the lathe bedways.
2. Loosen the finger lock nuts so the finger position can be adjusted (see **Figure 25**).
3. Insert the workpiece, and support it with the chuck and the tailstock.
4. Position the steady rest along the workpiece where desired. Tighten the steady rest lock nut (see **Figure 25**) to secure the steady rest in place.
5. Turn the adjustment knobs so the fingers are snug against the workpiece and then tighten the finger lock nuts.

Note: You must lubricate the finger tips with oil during operation to avoid tip galling. After prolonged use, the fingers will show wear, so you will have to replace or file the tips for a new contact surface.

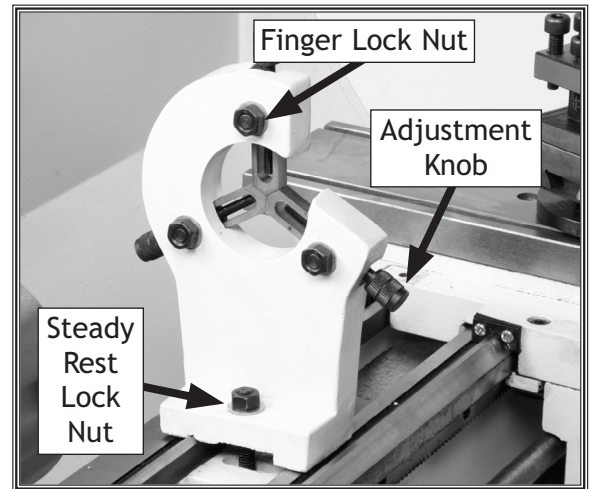


Figure 25. Steady rest adjustments.

Using the Follow Rest

The follow rest in **Figure 26** is mounted on the saddle and follows the movement of the tool. The rest requires only two fingers, as the cutting tool acts as the third.

The follow rest is used on long, slender parts to prevent flexing of the workpiece during cutting.

Note: You must lubricate the finger tips with oil during operation to avoid tip galling. After prolonged use, the fingers will show wear, so you will have to replace or file the tips for a new contact surface.

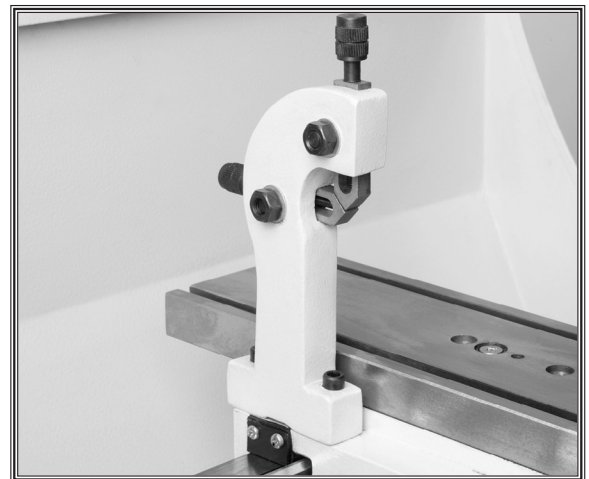


Figure 26. Follow rest attachment.

Setting Compound Slide

The compound slide is used to cut tapers on parts or to set the proper infeed angle when threading. It may also be used to cut specific lengths longitudinally, when set parallel to the spindle axis.

To set the angular position, do these steps:

1. Loosen the hex nuts, one on each side of the compound slide (see **Figure 27**).
2. Rotate the compound slide to the desired angular position using the scale.
3. Tighten the two hex nuts. Be sure to not overtighten, as you may strip threads or crack or distort the base casting.

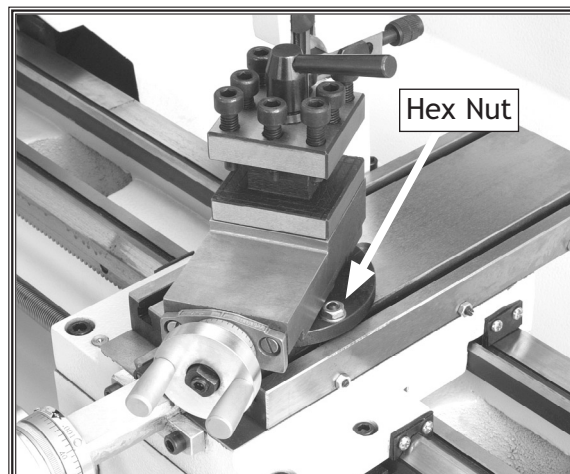


Figure 27. Compound slide, scale, and handwheel.

Using the Tool Posts

The four-way tool post (**Figure 28**) is mounted on top of the compound slide, and allows a maximum of four tools to be loaded simultaneously.

The four-way tool post allows for quick indexing to new tools. This is accomplished by rotating the top handle counterclockwise and then rotating the tool post to the desired position. Rotate the top handle clockwise to lock the tool into position.

The universal single tool post holder can hold tool arbors and odd shaped cutting tools (**Figure 29**).

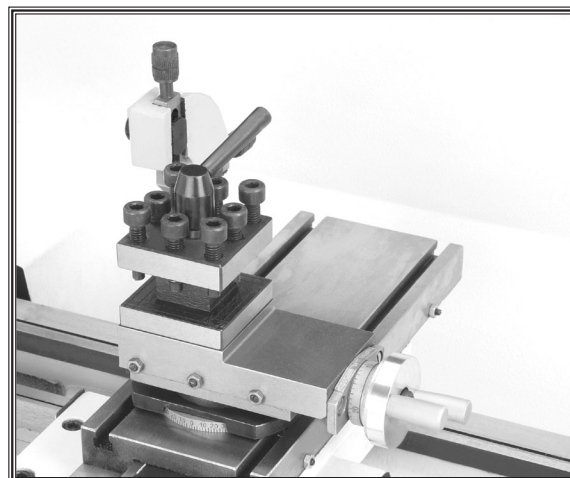


Figure 28. Four-way tool post.

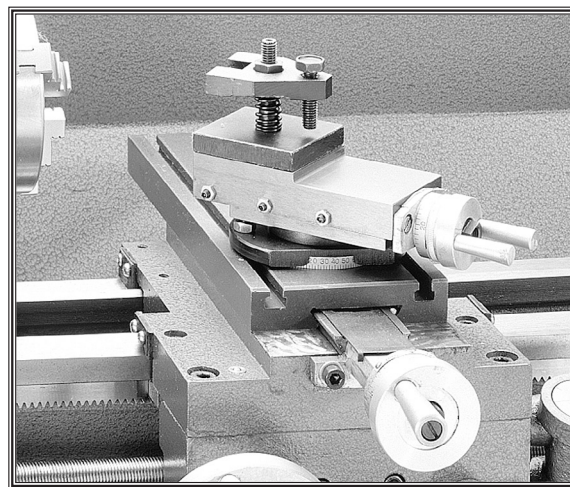


Figure 29. Universal tool post.

Using Manual Feed

You can manually move the cutting tool around the workpiece with the three handwheels shown in **Figure 30**.

Longitudinal Handwheel

The longitudinal handwheel moves the carriage left or right along the bed. This control is helpful when setting up the machine for turning or when manual movement is desired during turning operations.

Cross Feed Handwheel

The cross slide handwheel moves the top slide toward and away from the work. Turning the dial clockwise moves the slide toward the workpiece.

Compound Slide Handwheel

The compound slide handwheel controls the position of the cutting tool relative to the workpiece. The graduated dial is adjustable using the same method as the dial on the cross slide. Angle adjustment is held by two hex nuts on the base of the compound slide.

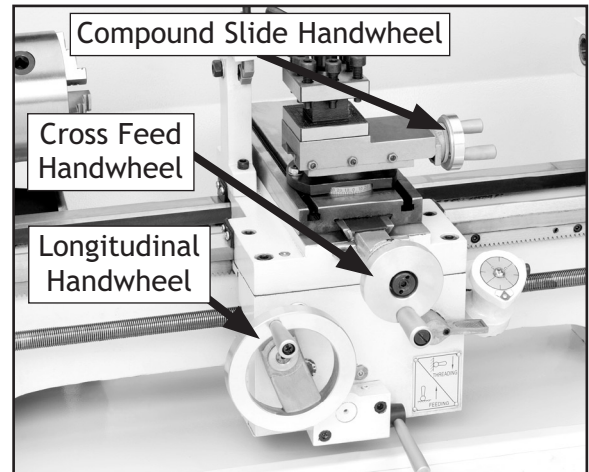


Figure 30. Carriage controls.

Setting RPM

To determine and set the needed cutting RPM, do these steps:

1. Use the table in **Figure 31** to determine the cutting speed required for the workpiece material.
2. Determine the average final diameter of the workpiece in inches, for the cut to be made.

WARNING

Failure to follow RPM and feed rate guidelines may threaten operator safety from ejected parts or broken tools.

3. Now use the following formula to determine the closest RPM for the cutting operation:

$$\frac{(\text{Cutting Speed} \times 4)}{\text{Diameter of Cut}} = \text{RPM}$$

4. With the calculated RPM, refer to the **RPM Chart** on **Page 31** and select the pulley ratio that gives you the closest RPM to what you need.
5. **DISCONNECT THE LATHE FROM POWER!**
6. Release the belt tension lever (**Figure 32**).
7. Make sure the spindle is completely stopped and then open the belt access door (**Figure 33**).
8. Move the belt to the appropriate pulley combination that is closest to your calculated RPM. In the chart for example, 300 RPM is needed so BC2 is selected:

A	RPM					
	130	300	400	600	1000	2000
B	BC1	BC2	AC1	BC3	AC2	AC3
C						

Pos 1 2 3

9. Close the door and re-tension the belt.

Cutting Speeds for High Speed Steel (HSS) Cutting Tools

Workpiece Material	Cutting Speed (sfm)
Aluminum & alloys	300
Brass & Bronze	150
Copper	100
Cast Iron, soft	80
Cast Iron, hard	50
Mild Steel	90
Cast Steel	80
Alloy Steel, hard	40
Tool Steel	50
Stainless Steel	60
Titanium	50
Plastics	300-800
Wood	300-500

Note: For carbide cutting tools, double the cutting speed. These values are a guideline only. Refer to the *MACHINERY'S HANDBOOK* for more detailed information.

Figure 31. Cutting speed table for HSS cutting tools.



Figure 32. Belt tension lever.

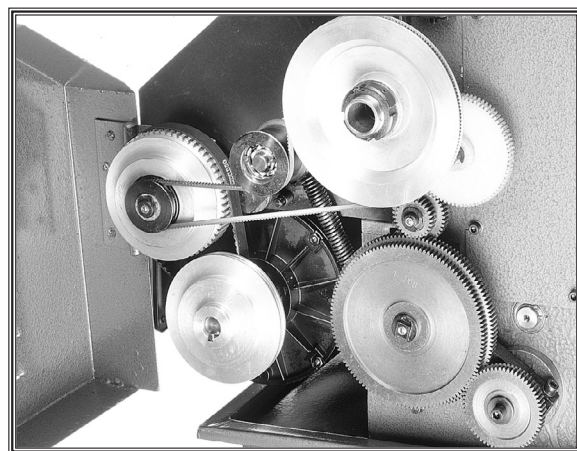
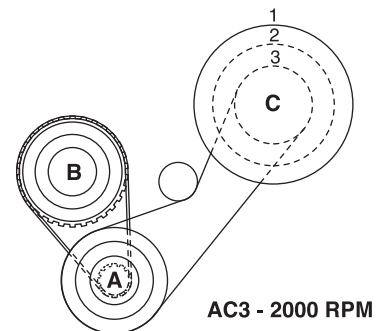
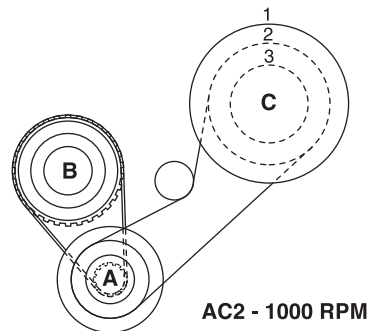
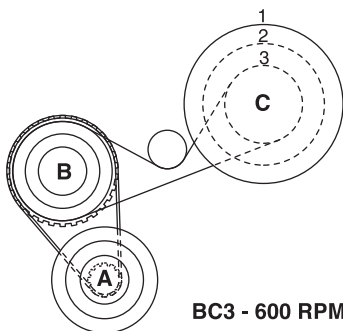
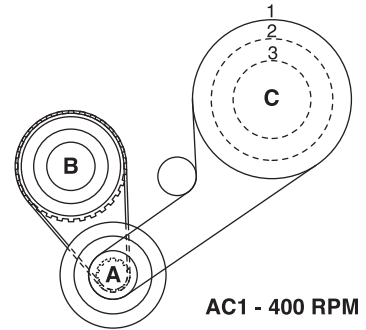
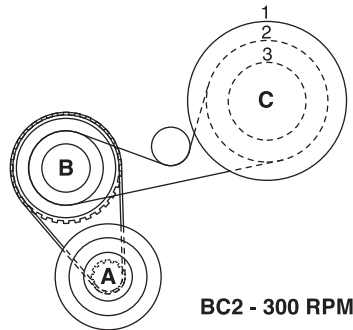
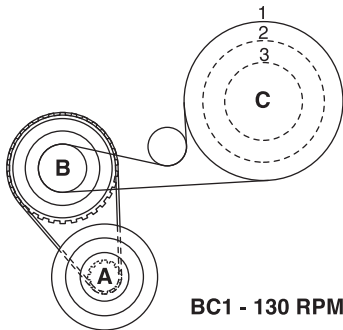


Figure 33. Belt and change gear access.

RPM Chart

! WARNING

Failure to follow RPM and feed rate guidelines may threaten operator safety from ejected parts or broken tools.



Setting Power Feed Rate

The carriage has longitudinal power feed capability of 0.0047, 0.0063, 0.0078, and 0.012 inches per revolution of the chuck. All directions reverse when spindle rotation is reversed.

NOTICE

Feed rate is based on spindle RPM. High feed rates combined with high spindle speeds result in a rapidly moving carriage or cross slide. Pay close attention to the feed rate you have chosen and be ready to disengage the apron. Failure to do this may cause the carriage to crash into the chuck. If a cutting depth is too great, the lathe may be able to make the cut, but disengaging the apron from the lead screw at the last minute may be difficult.

To set and engage the power feed, do these steps:

1. DISCONNECT THE LATHE FROM POWER!
2. Determine the feed rate that will give you the type of finish you need. For example, in this case the chart shows that 0.0047" is required. The gearbox lever is in position 9 (Figure 34), and install the "60" and 28-tooth change gears in the "a" and "b" positions (Figure 35).

		Lever	9	5	1	1
		a	28	28	28	42
		b	60	60	60	60
		Feed	0.0047	0.0063	0.0078	0.012

Note: All change gears are stamped with the number of teeth they have and keep the gear backlash slightly loose at 0.003" to 0.008".

3. Use the leadscrew direction lever to select leadscrew rotation.
4. Set your cutting depth to a few thousandths of an inch, turn the lathe **ON**, and move the apron feed lever (Figure 36) to engage and disengage the auto feed.



Figure 34. Gearbox selector in position 9.

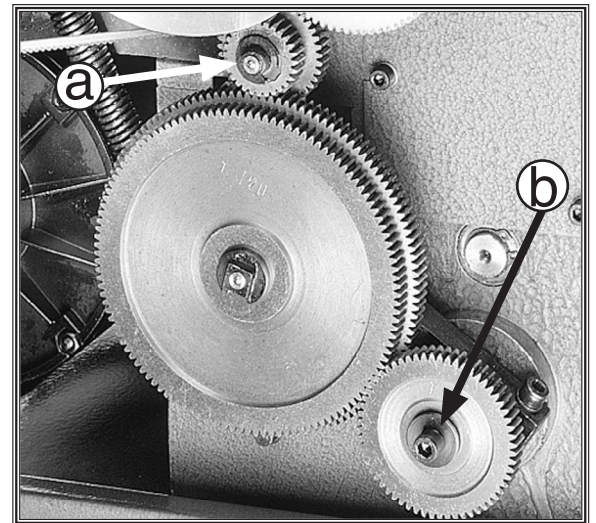


Figure 35. Change gear locations.

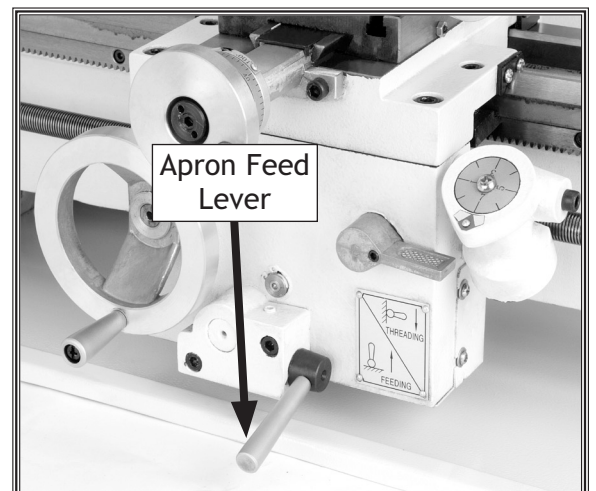


Figure 36. Apron feed lever.

Threading Setup

This lathe can cut inch and metric threads. It is equipped with a thread dial that lets you know where to re-engage the half nut when cutting most inch threads. The thread dial makes sure the cutting tool falls back into the same groove that has been just cut.

To setup for threading, do these steps:

1. DISCONNECT THE LATHE FROM POWER!
2. Install the appropriate change gears to achieve the thread pitch needed. For example, the chart below shows that to get 40 threads per inch, you must move the gearbox lever to position "4" (Figure 37), and install the gears stamped "30" and "60" in the "a" and "b" positions shown in Figure 38.

Note: Keep the gear backlash slightly loose at 0.003" to 0.008".

n/1"	a	b	Lever								
			1	2	3	4	5	6	7	8	9
40	60	30	8	9	9.5	10	11	11.5	12	13	14
80	30	30	16	18	19	20	22	23	24	26	28
120	30	60	32	36	38	40	44	46	48	52	56

mm	a	b	Lever								
			1	2	3	4	5	6	7	8	9
1.27	30	30	16	18	19	20	22	23	24	26	28
2.54	30	60	32	36	38	40	44	46	48	52	56



Figure 37. Gearbox selector in position 4.

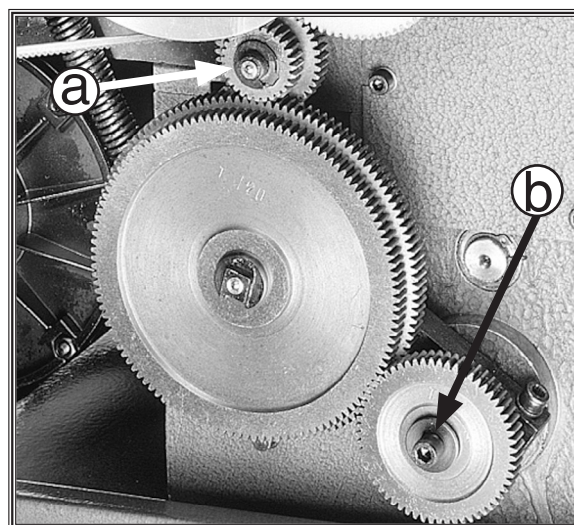


Figure 38. Change gear locations.

3. Set your cutting depth to a few thousandths of an inch, engage the half nut lever, and engage the threading dial (Figure 39).
4. Turn the lathe on, let it thread, and turn the lathe off before the tool or apron crashes. Finish the threading pass by manual rotation of the chuck, and then disengage the half nut lever.
5. Return the apron, position the tool to make second the pass, and engage the half nut where the dial indicated by the thread dial chart on the apron.

FOR METRIC THREADING, keep the half nut engaged during the entire threading process. When the tool reaches the end of the first threading pass, turn the motor **OFF** and back the tool out of the thread. Reverse the motor direction to move the cutting tool back to the thread beginning. Repeat these steps and **DO NOT** disengage the half nut until you have completed your thread.

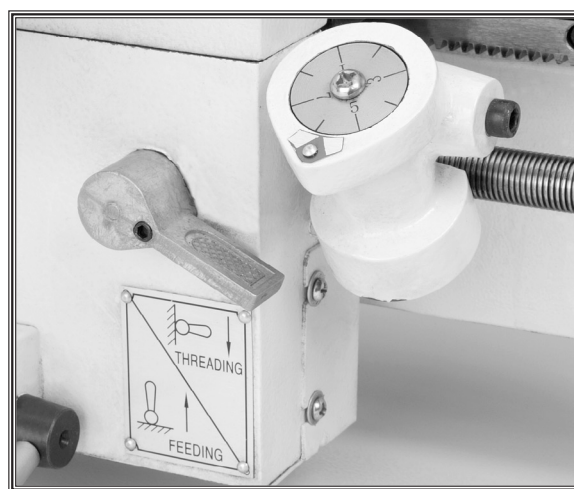


Figure 39. Thread dial and half nut lever.

MAINTENANCE

General Maintenance

Regular periodic maintenance of your benchtop lathe will ensure optimum performance. Make a habit of inspecting your machine each time you use it.

Check for the following conditions and repair or replace when necessary:

- Loose mounting bolts and chuck.
- Worn switch or safety features.
- Worn or damaged cords and plugs.
- Worn Belt.
- Any other condition that could hamper the safe operation of this machine.

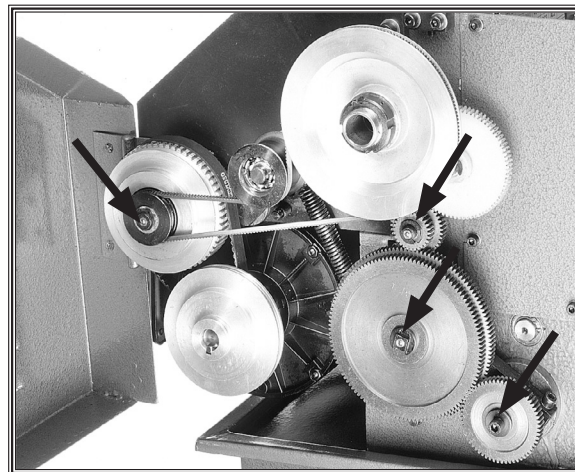


Figure 40. Spindle ball oiler locations.

General Cleaning

Clean your machine every day or more often as needed. Make sure to unplug the lathe before cleaning it. Never blow the lathe off with compressed air, otherwise you will force metal shavings deep into mechanisms. Remove chips as they accumulate with rags, brushes, and a shop vacuum. Chips left on the lathe soaked with water-based coolant will eventually invite oxidation and a gummy residue build up around moving parts. Cleaning will help keep your lathe running smoothly. Always be safe and responsible with the use and disposal of cleaning products.

Never use acetone, gasoline, or lacquer thinner to remove stains or oil from painted surfaces. These chemicals will melt the paint. Use mineral spirits or mild household degreasers.

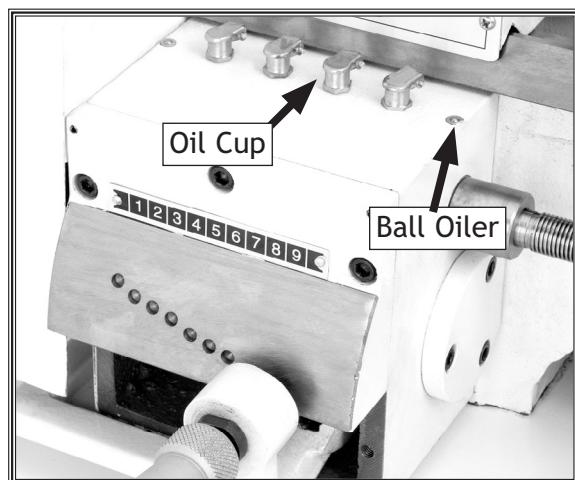


Figure 41. Gearbox ball oiler, and oil cup locations.

General Lubrication

Wipe the bed ways and other unpainted machine surfaces as required with a machine oil to prevent rust. Paint all gears shown in Figure 42 with a good quality automotive wheel bearing grease, and paint the lead screw lightly with the same grease.

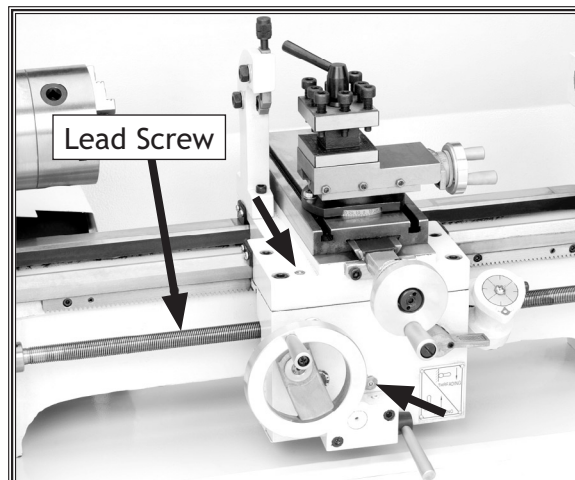


Figure 42. Apron ball oiler locations.

For daily lubrication, use a manual oil gun with a general 10W machine oil to lubricate the following 13 ball oiler fittings and the 4 oil cups. Wipe off all oil ball fittings with a rag, and then oil the following locations:

- Gearbox (2 ball oilers on top)
- Gearbox (4 oil cups on top)
- Tailstock (1 ball oiler on top)
- Headstock (2 ball oilers on top)
- Apron (2 ball oilers on apron face)
- Apron (1 ball oiler on top left front)
- Lead Screw End Cap Bushing (1 ball oiler on side)
- Idler Drive Pulley (1 ball oiler on spindle end)
- Change Gear Spindles (3 ball oilers on spindle ends)

NOTICE

Failure to follow lubrication guidelines will lead to rapid deterioration of benchtop lathe components.

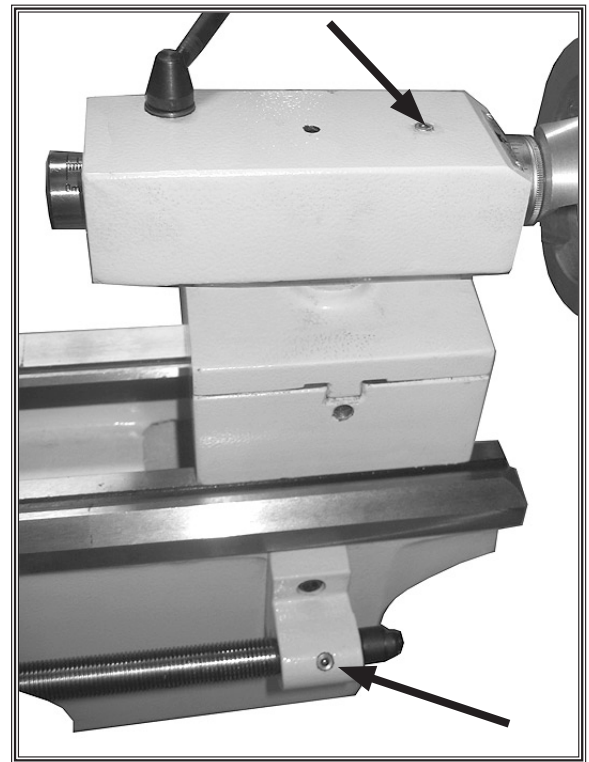


Figure 43. End-cap bushing and tailstock ball oilers.

SERVICE

Cross Slide Backlash

Backlash is the amount of play found in a lead screw. It can be found by turning the cross slide handwheel in one direction, and then turning the handwheel the other direction. When the cross slide begins to move, the backlash has been taken up.

Note: Avoid the temptation to overtighten the cross slide backlash screw. Overtightening will cause excessive wear to the sliding block and lead screw.

Backlash is adjusted by tightening or loosening the screw shown in **Figure 44**. This screw draws a wedge-type nut against the lead screw and main nut. If you get it too tight, loosen the screw a few turns and tap the cross feed a few times with a rubber or wooden mallet. Then turn the handle slowly back-and-forth until the handle turns freely. To readjust the backlash, rock the handle back-and-forth and tighten the screw slowly until the backlash is at approximately 0.001" to 0.005" as indicated on the handwheel dial.

Note: Reducing backlash to less than 0.001" is impractical and reduces the life of the cross slide.



Figure 44. Cross slide backlash adjustment cap screw.

Cross-Slide and Saddle-Gib Adjustments

When adjusting these gibs (**Figure 45**), keep in mind that the goal is to remove sloppiness in the ways without causing the slides to bind. Loose gibs will cause a poor finish on the workpiece and may cause undue wear on the slide. Over-tightening may cause premature wear on the slide, lead screw, and half-nut.

The cross slide gib is a tapered piece of iron. When you loosen the three jam nuts and tighten the three set screws, the screws force the tapered gib to fill the loose void in the way, thus tightening the play in the cross slide. If more play is needed turn the screws the other direction.

For the saddle adjustment, remove the saddle clamp shoe (**Figure 45**), and adjust saddle clamp shoe set screw and reinstall the clamp shoe. Trial and error of this process will allow for proper saddle-to-way adjustment.

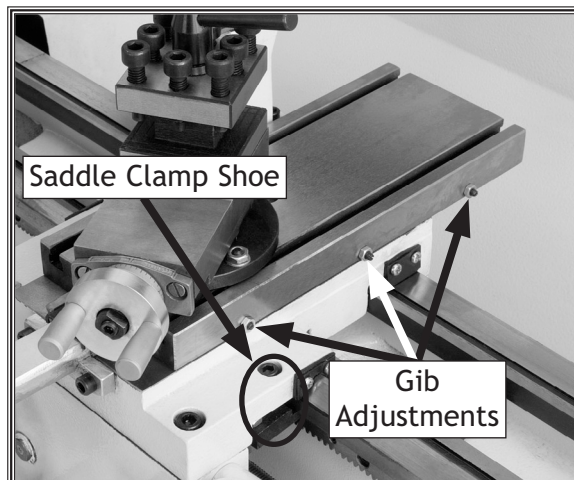


Figure 45. Gib and clamp shoe adjustment locations.

Replacing the V-Belt

To replace the V-belt, do these steps:

1. DISCONNECT POWER TO THE LATHE!
2. Open the change gear access door.
3. Move the belt tension lever shown **Figure 46** to release belt tension.
4. While carefully turning the spindle pulley (**Figure 47**), roll off and then roll on the new belt.
5. Re-tension the belt, and close the access door.

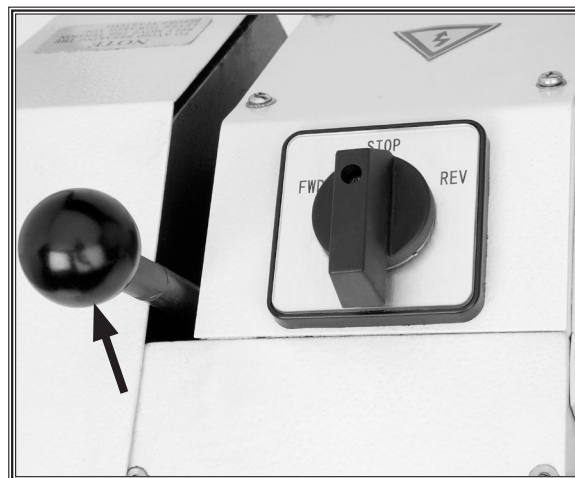


Figure 46. Belt tension lever.

Replacing the Cogged-Belt

To replace the cogged-belt, do these steps:

1. DISCONNECT POWER TO THE LATHE!
2. Open the change gear access door.
3. Move the belt tension lever shown in **Figure 46** to release belt tension.
4. While carefully turning the spindle pulley (**Figure 47**), roll off the V-belt.
5. Using a 16mm open open-end wrench, loosen the idler pulley spindle jam nut (**Figure 47**), and the retaining nut. The idler pulley and spindle will then slide toward the motor de-tensioning the cogged-belt.
6. Replace the cogged-belt, and make sure to engage the belt cogs with the lugs in the pulleys.
7. While holding the belt in tension, use the 16mm wrench to tighten the idler pulley and spindle in place.
8. Roll the V-belt back onto the relevant pulleys.
9. Re-tension the belt, and close the access door.

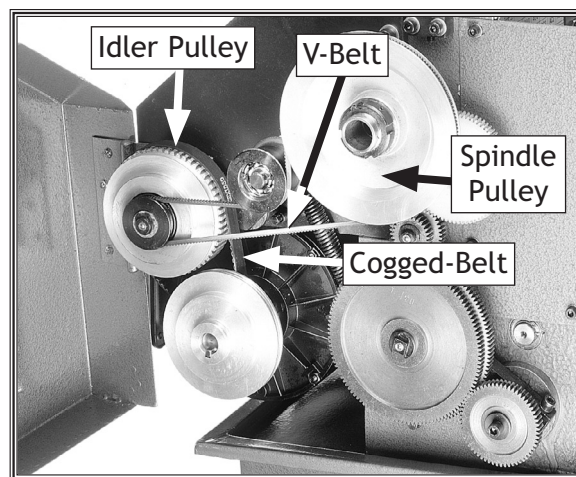


Figure 47. Change gear access door open.

Electrical Safety Instructions

These pages are current at the time of printing. However, in the spirit of improvement, we may make changes to the electrical systems of future machines. Study this diagram carefully. If you notice differences between your machine and these wiring diagrams, call Woodstock International Technical Support at (360) 734-3482.
















WARNING

- SHOCK HAZARD.** Working on wiring that is connected to a power source is extremely dangerous. Touching electrified parts will result in personal injury including but not limited to severe burns, electrocution, or death. Disconnect the power from the machine before servicing electrical components!
- QUALIFIED ELECTRICIAN.** Due to the inherent hazards of electricity, only a qualified electrician should perform wiring tasks on this machine. If you are not a qualified electrician, get help from one before attempting any kind of wiring job.
- WIRE CONNECTIONS.** All connections must be tight to prevent wires from loosening during machine operation. Double-check all wires disconnected or connected during any wiring task to ensure tight connections.
- WIRE/COMPONENT DAMAGE.** Damaged wires or components increase the risk of serious personal injury, fire, or machine damage. If you notice that any wires or components are damaged while performing a wiring task, replace those wires or components before completing the task.
- MOTOR WIRING.** The motor wiring shown in these diagrams is current at the time of printing, but it may not match your machine. Always use the wiring diagram inside the motor junction box.
- MODIFICATIONS.** Using aftermarket parts or modifying the wiring beyond what is shown in the diagram may lead to unpredictable results, including serious injury or fire.
- CAPACITORS/INVERTERS.** Some capacitors and power inverters store an electrical charge for up to five minutes after being disconnected from the power source. To avoid being shocked, wait at least this long before working on these components.
- ELECTRICAL REQUIREMENTS.** You **MUST** follow the electrical requirements at the beginning of this manual when connecting your machine to a power source.
- EXPERIENCING DIFFICULTIES.** If you are experiencing difficulties understanding the information included in this section, contact our Technical Support at (360) 734-3482.

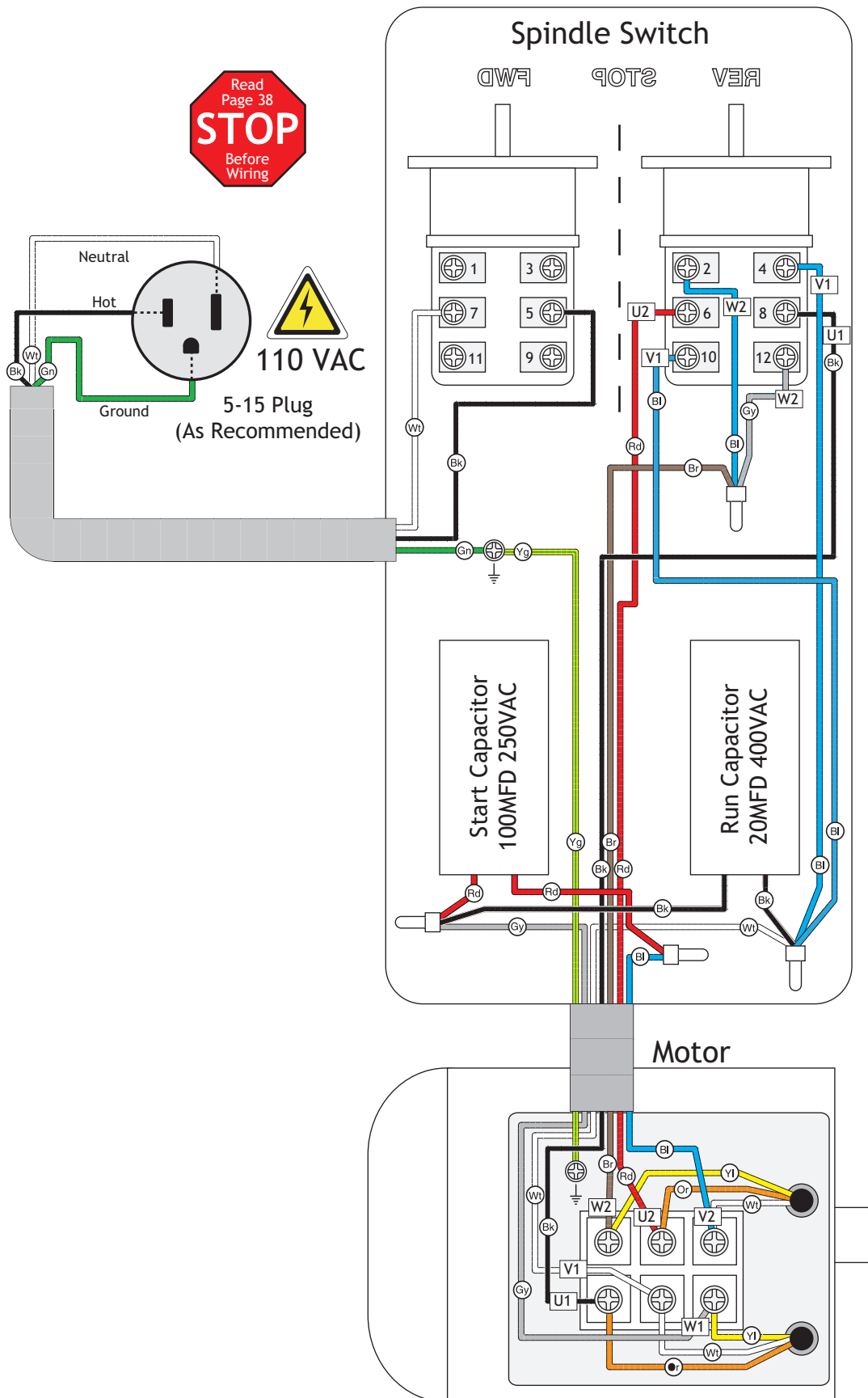
NOTICE

The photos and diagrams included in this section are best viewed in color. You can view these pages in color at www.shopfox.biz.

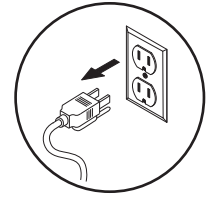
WIRING DIAGRAM COLOR KEY

BLACK 	BLUE 	YELLOW 	LIGHT BLUE 
WHITE 	BROWN 	YELLOW GREEN 	BLUE WHITE 
GREEN 	GRAY 	PURPLE 	TUR-QUOISE 
RED 	ORANGE 	PINK 	

Wiring Diagram



Troubleshooting



This section covers the most common lathe problems. DO NOT make any adjustments until the lathe is disconnected from power and all moving parts have come to a complete stop. If you need help or are unsure of procedures, call our Technical Support Line at (360) 734-3482.

Motor & Electrical

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
Motor will not start.	<ol style="list-style-type: none"> 1. Incorrect lathe operation. 2. Main power panel switch is OFF. 3. Start capacitor is at fault. 4. Circuit breaker or fuse is at fault. 5. No voltage or open connection. 6. Motor is at fault. 	<ol style="list-style-type: none"> 1. Use the spindle direction ON/OFF lever. 2. Turn the main power panel switch ON. 3. Replace start capacitor. 4. Seek an electrician to troubleshoot and repair the shop power supply. 5. Test circuit, replace wires and connections as required. 6. Replace motor.
Fuses or circuit breakers trip open.	<ol style="list-style-type: none"> 1. Short circuit in line cord or plug. 2. Short circuit in motor or loose connections. 3. Incorrect fuses or circuit breakers in power supply. 	<ol style="list-style-type: none"> 1. Inspect cord or plug for damaged insulation and shorted wires. 2. Inspect all connections on motor for loose or shorted terminals or worn insulation. 3. Install correct fuses or circuit breakers.
Motor only turns chuck one direction.	<ol style="list-style-type: none"> 1. Start capacitor is at fault. 2. Wiring is at fault. 3. Motor rotation switch is at fault. 4. Motor is at fault. 	<ol style="list-style-type: none"> 1. Replace failed capacitor. 2. Refer to the wiring diagram on Page 39. Make sure the motor and rotation switch are wired correctly. 3. Replace motor rotation switch. 4. Replace the motor.
Motor overheats or bogs down during a cut.	<ol style="list-style-type: none"> 1. Excessive depth of cut. 2. RPM or feed rate wrong for operation. 3. Dull cutters. 	<ol style="list-style-type: none"> 1. Decrease depth of cut. 2. Refer to RPM feed rate chart for appropriate rates. 3. Sharpen or replace cutters.

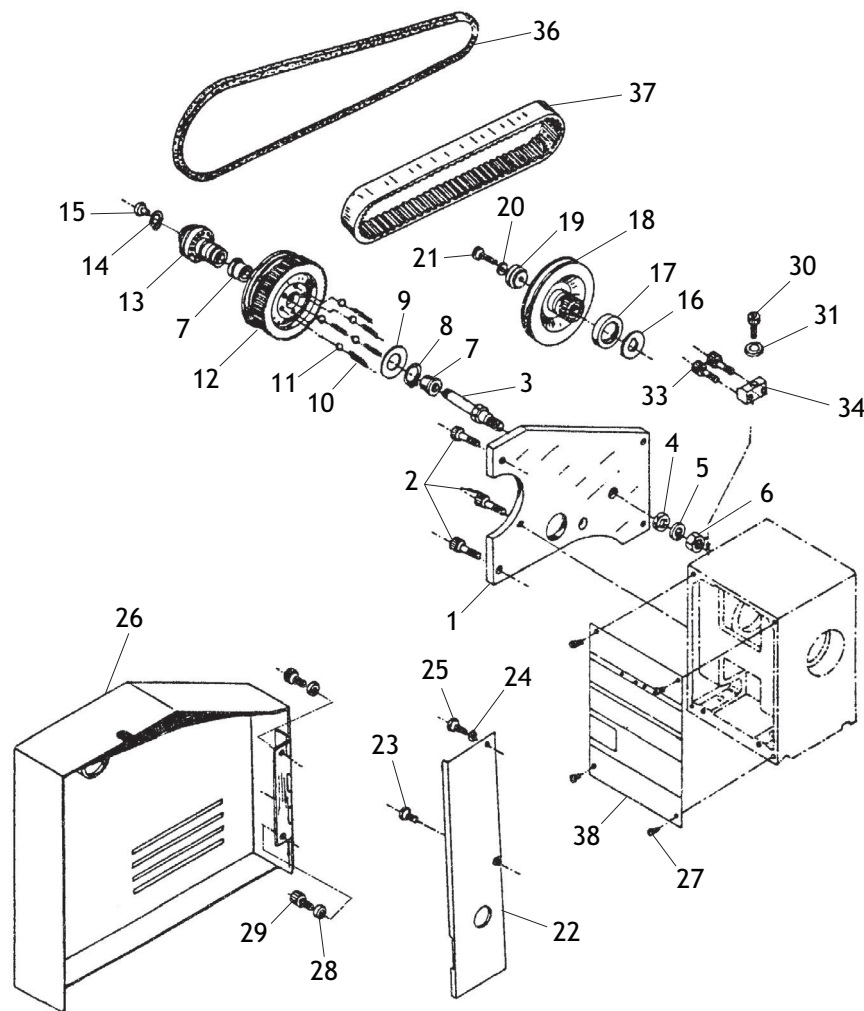
Operation and Work Results

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
Entire machine vibrates excessively upon startup and while running.	<ol style="list-style-type: none"> 1. Workpiece is unbalanced. 2. Worn or broken gear present. 3. Chuck or faceplate has become unbalanced. 4. Spindle bearings at fault. 	<ol style="list-style-type: none"> 1. Reinstall workpiece so it is as centered with the spindle bore as possible. 2. Inspect gears and replace if necessary. 3. Rebalance chuck or faceplate; contact a local machine shop for help. 4. Replace or adjust spindle bearings.
Bad surface finish.	<ol style="list-style-type: none"> 1. Wrong RPM or feed rate. 2. Dull tooling or poor tool selection. 3. Too much play in gibs or saddle clamp shoe. 4. Tool too high. 	<ol style="list-style-type: none"> 1. Adjust for appropriate RPM and feed rate. 2. Sharpen tooling or select a better tool for the intended operation. 3. Tighten gibs and saddle clamp shoe. 4. Lower the tool position.
Can't remove tapered tool from tailstock quill.	<ol style="list-style-type: none"> 1. Quill had not retracted all the way back into the tailstock. 2. Debris was not removed from taper before inserting into quill. 	<ol style="list-style-type: none"> 1. Turn the quill handwheel until it forces taper out of quill. 2. Always make sure that taper surfaces are clean.
Cross slide, compound slide, or carriage feed has sloppy operation.	<ol style="list-style-type: none"> 1. Saddle clamp shoe is loose. 2. Handwheel is loose. 3. Lead screw mechanism or end cap bushing is worn or out. 	<ol style="list-style-type: none"> 1. Remove and readjust the saddle clamp shoe. 2. Tighten handwheel fasteners. 3. Replace lead screw mechanism and bushing.
Cross slide, compound slide, or carriage feed handwheel is hard to move.	<ol style="list-style-type: none"> 1. Gibs are loaded up with shavings, dust, or grime. 2. Gib screws are too tight. 3. Backlash setting too tight (cross slide only). 4. Bedways are dry. 	<ol style="list-style-type: none"> 1. Remove gibs, clean ways/dovetails, lubricate, and readjust gibs. 2. Loosen gib screw(s) slightly, and lubricate bedways. 3. Slightly loosen backlash setting by loosening the locking screw and adjusting the spanner ring at the end of the handle. 4. Lubricate bedways and handles.
Cutting tool or machine components vibrate excessively during cutting.	<ol style="list-style-type: none"> 1. Tool holder not tight enough. 2. Cutting tool sticks too far out of tool holder; lack of support. 3. Dull cutting tool. 4. Incorrect spindle speed or feed rate. 5. Gibs or saddle clamp shoe are out of adjustment. 	<ol style="list-style-type: none"> 1. Check for debris, clean, and retighten. 2. Reinstall cutting tool so no more than 1/3 of the total length is sticking out of tool holder. 3. Replace or sharpen cutting tool. 4. Use the recommended spindle speed. 5. Tighten gibs and adjust saddle clamp shoe.
Inaccurate turning results from one end of the workpiece to the other.	<ol style="list-style-type: none"> 1. Headstock and tailstock are not properly aligned with each other. 	<ol style="list-style-type: none"> 1. Realign the tailstock to the headstock spindle bore center line.
Chuck jaws won't move or don't move easily.	<ol style="list-style-type: none"> 1. Chips lodged in the jaws. 	<ol style="list-style-type: none"> 1. Remove jaws, clean and lubricate chuck threads, and replace jaws.
Carriage won't feed.	<ol style="list-style-type: none"> 1. Gears are not all engaged. 2. Gears are broken. 3. Loose screw on the feed handle. 	<ol style="list-style-type: none"> 1. Adjust gear positions. 2. Replace. 3. Tighten.

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
Loud, repetitious noise coming from machine at or near the motor.	<ol style="list-style-type: none"> 1. Pulley set screws or keys are missing or loose. 2. Motor fan is hitting the cover. 	<ol style="list-style-type: none"> 1. Inspect keys and set screws. Replace or tighten if necessary. 2. Tighten fan or shim cover, or replace items.
Carriage hard to move.	<ol style="list-style-type: none"> 1. Saddle clamp shoe is too tight. 2. Chips have loaded up on bedways. 3. Bedways are dry and in need of lubrication. 4. Longitudinal stops are interfering. 	<ol style="list-style-type: none"> 1. Readjust carriage clamp shoe. 2. Frequently clean away chips that load up during turning operations. 3. Lubricate bedways and handles. 4. Check to make sure that stops are floating and not hitting the center stop.
Gear change levers will not shift into position.	<ol style="list-style-type: none"> 1. Gears not aligned in headstock. 	<ol style="list-style-type: none"> 1. Rotate spindle by hand until gear falls into place.
Motor overheats.	<ol style="list-style-type: none"> 1. Motor overloaded. 2. Air circulation through the motor restricted. 	<ol style="list-style-type: none"> 1. Reduce load on motor. 2. Clean out motor to provide normal air circulation.
Loud, repetitious noise coming from machine.	<ol style="list-style-type: none"> 1. Gears not aligned in headstock or no backlash. 2. Broken gear or bad bearing. 3. Workpiece is hitting stationary object. 4. The cogged-belt has stripped. 	<ol style="list-style-type: none"> 1. Adjust gears and establish backlash. 2. Replace broken gear or bearing. 3. Stop lathe immediately and correct interference problem. 4. Replace the cogged-belt.
Tailstock quill will not feed out of tailstock.	<ol style="list-style-type: none"> 1. Quill lock lever is tightened down. 	<ol style="list-style-type: none"> 1. Turn lever counterclockwise.
Motor is loud when cutting. Overheats or bogs down in the cut.	<ol style="list-style-type: none"> 1. Excessive depth of cut or feed rate. 2. RPM or feed rate wrong for cutting operation. 3. Cutting tool is dull. 4. Gear setup is too tight, causing them to bind. 	<ol style="list-style-type: none"> 1. Decrease depth of cut or feed rate. 2. Refer to RPM feed rate chart for appropriate rates. 3. Sharpen or replace the cutting tool. 4. Readjust the gear setup with a small amount of backlash so the gears move freely and smoothly when the chuck is rotated by hand.

PARTS

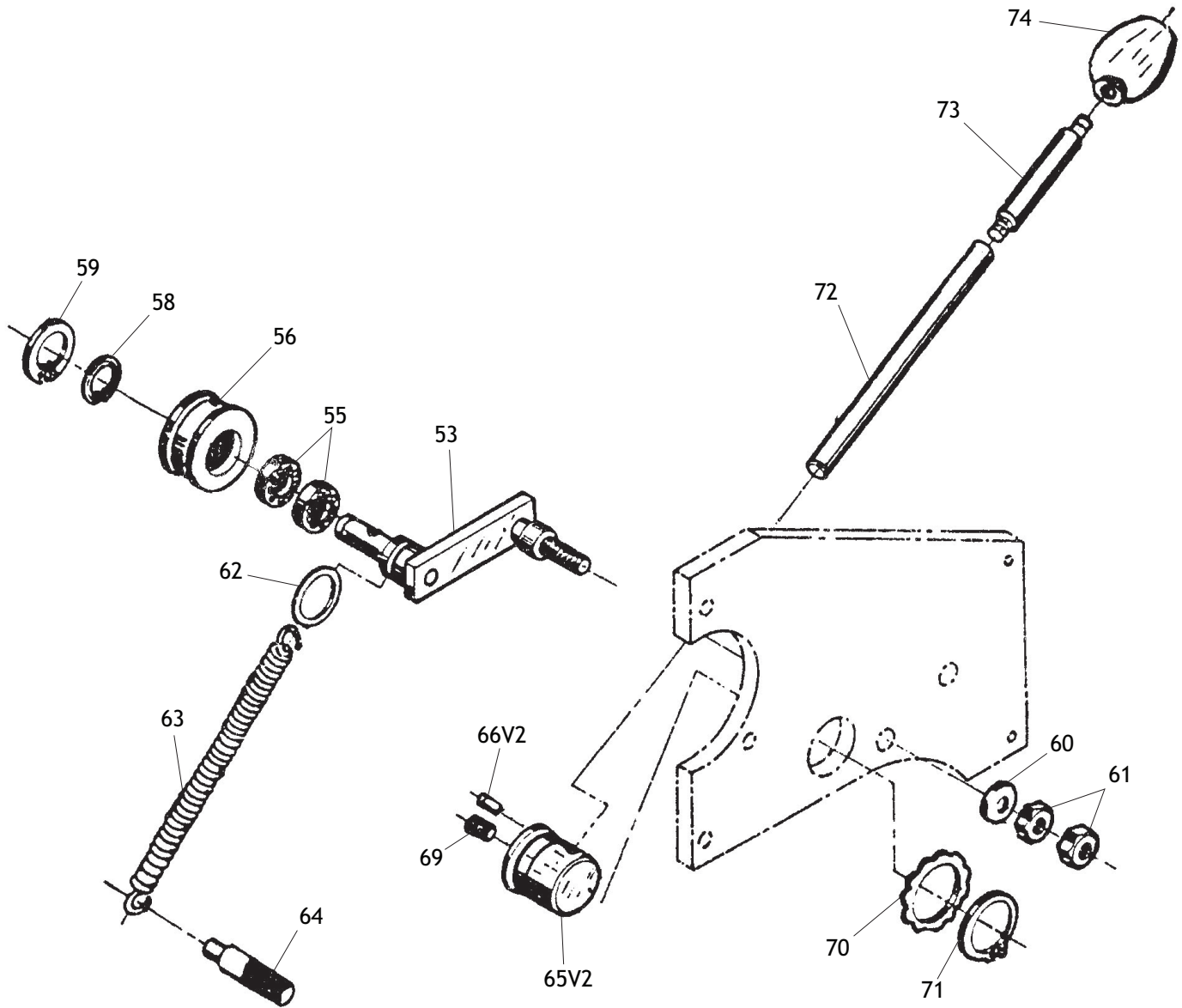
Drive Belt



REF	PART #	DESCRIPTION
1	XM1049001	BRACKET PLATE
2	XPCAP15M	CAP SCREW M5-.8 X 20
3	XM1049003	IDLER PULLEY SHAFT
4	XPW04M	FLAT WASHER 10MM
5	XPLW06M	LOCK WASHER 10MM
6	XPN02M	HEX NUT M10-1.5
7	XM1049007	BUSHING
8	XPR11M	EXT RETAINING RING 25MM
9	XM1049009	IDLER PULLEY WASHER
10	XM1049010	COMPRESSION SPRING D4.5-1.75 X 24
11	XPSTB004M	STEEL BALL 5MM
12	XM1049012	IDLER PULLEY
13	XM1049013	CLUTCH HUB
14	XPR03M	EXT RETAINING RING 12MM
15	XPLUBE001M	TAP-IN BALL OILER 6MM
16	XM1049016	SPACER
17	XM1049017	COLLAR
18	XM1049018	MOTOR PULLEY

REF	PART #	DESCRIPTION
19	XM1049019	MOTOR PULLEY WASHER
20	XPLW03M	LOCK WASHER 6MM
21	XPCAP06M	CAP SCREW M6-1 X 25
22	XM1049022	COVER PLATE
23	XPCAP33M	CAP SCREW M5-.8 X 12
24	XPW02M	FLAT WASHER 5MM
25	XPCAP03M	CAP SCREW M5-.8 X 8
26	XM1049026	END GEAR COVER W/HINGE
27	XPCAP17M	CAP SCREW M4-.7 X 10
28	XPW03M	FLAT WASHER 6MM
29	XPCAP04M	CAP SCREW M6-1 X 10
30	XPCAP06M	CAP SCREW M6-1 X 25
31	XPW03M	FLAT WASHER 6MM
33	XPCAP02M	CAP SCREW M6-1 X 20
34	XM1049034	CLAMP BLOCK
36	XM1049036	V-BELT M5 X 710
37	XM1049037	COGGED BELT 170 X L 050
38	XM1049038	CONFIGURATION PLATE

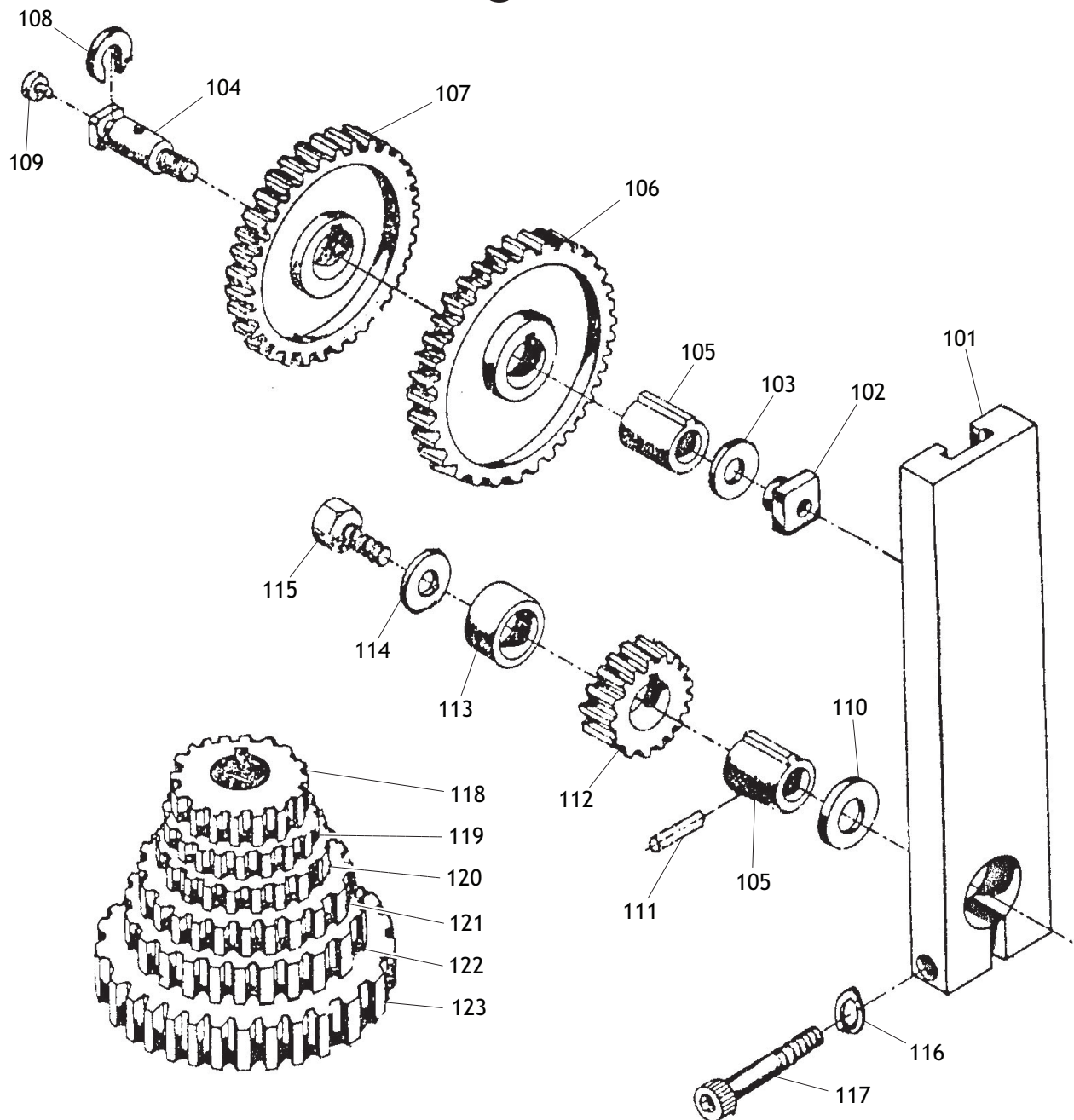
Belt Tensioner



REF	PART #	DESCRIPTION
53	XM1049053	AXLE BRACKET
55	XP6001ZZ	BALL BEARING 6001ZZ
56	XM1049056	ROLLER
58	XPR03M	EXT RETAINING RING 12MM
59	XPR20M	INT RETAINING RING 28MM
60	XPW04M	FLAT WASHER 10MM
61	XPN02M	HEX NUT M10-1.5
62	XM1049062	SPRING RING
63	XM1049063	EXTENSION SPRING D12 X 142

REF	PART #	DESCRIPTION
64	XM1049064	STEPPED SPRING BOLT
65V2	XM1049065V2	TENSIONING CAM V2.08.07
66V2	XM1049066V2	CAP SCREW M6-1 X 25
69	XPSS20M	SET SCREW M8-1.25 X 8
70	XM1049070	WAVY WASHER 34MM
71	XPR84M	EXT RETAINING RING 34MM
72	XM1049072	BELT TENSION LEVER
73	XM1049073	EXTENSION ROD
74	XM1049074	KNOB M10-1.5 X 32

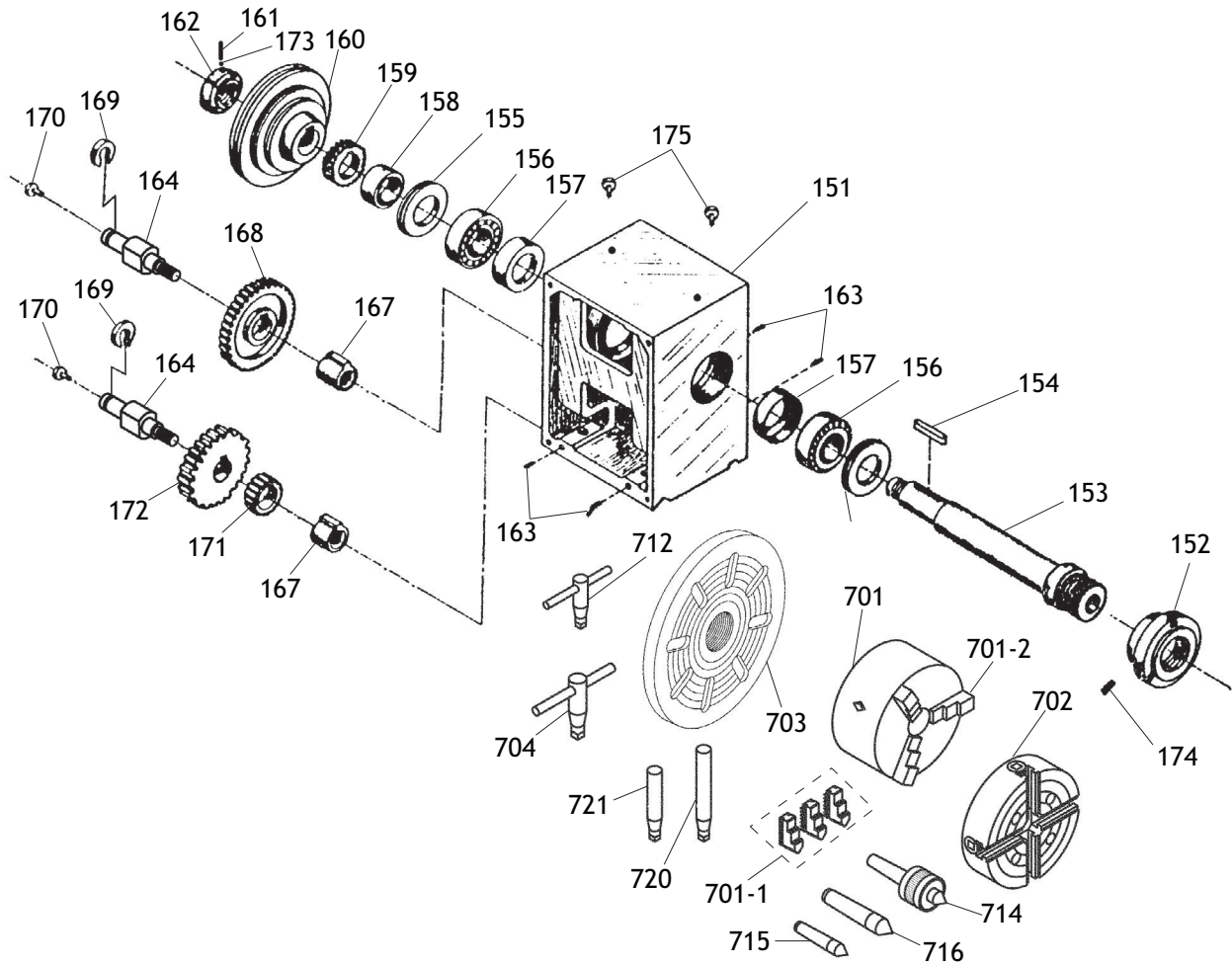
Change Gears



REF	PART #	DESCRIPTION
101	XM1049101	BRACKET
102	XM1049102	T-NUT M6-1
103	XPW03M	FLAT WASHER 6MM
104	XM1049104	SHAFT
105	XM1049105	KEYED BUSHING
106	XM1049106	GEAR 127T
107	XM1049107	GEAR 120T
108	XM1049108	SHAFT RETAINING CLIP
109	XPLUBE001M	TAP-IN BALL OILER 6MM
110	XPW04M	FLAT WASHER 10MM
111	XPRP19M	ROLL PIN 4 X 14
112	XM1049112	GEAR 30T

REF	PART #	DESCRIPTION
113	XM1049113	SPACER
114	XPW03M	FLAT WASHER 6MM
115	XPCAP04M	CAP SCREW M6-1 X 10
116	XPLW03M	LOCK WASHER 6MM
117	XPCAP48M	CAP SCREW M6-1 X 35
118	XM1049118	GEAR 28T
119	XM1049119	GEAR 36T
120	XM1049120	GEAR 42T
121	XM1049121	GEAR 45T
122	XM1049122	GEAR 60T
123	XM1049123	GEAR 80T

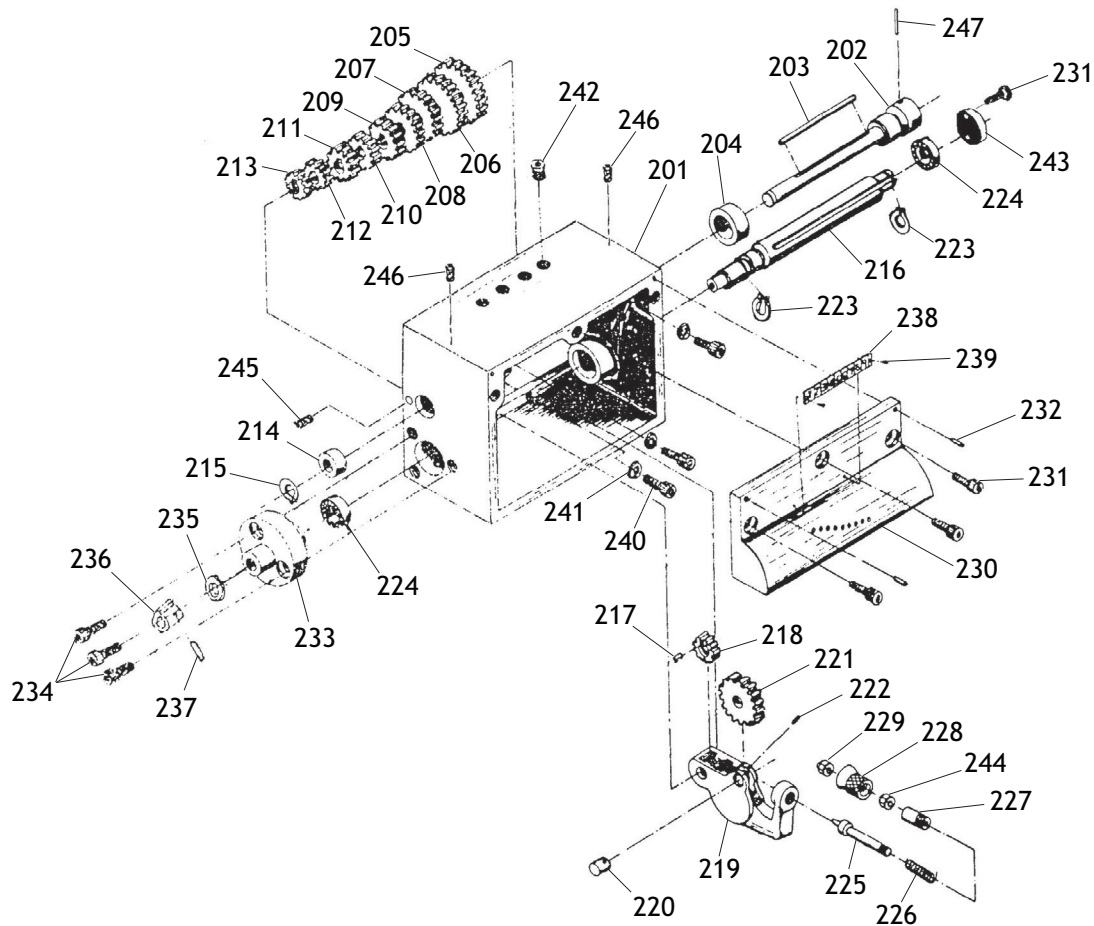
Headstock



REF	PART #	DESCRIPTION
151	XM1049151	HEADSTOCK HOUSING
152	XM1049152	3-JAW CHUCK BACK PLATE
153	XM1049153	SPINDLE
154	XM1049154	KEY 8 X 5 X 40
155	XM1049155	GASKET
156	XP32007	TAPERED BEARING 32007
157	XM1049157	BEARING CAP
158	XM1049158	SPACER
159	XM1049159	GEAR 40T
160	XM1049160	SPINDLE PULLEY
161	XPSS08M	SET SCREW M4-.7 X 5
162	XM1049162	THREADED LOCK COLLAR
163	XPSS23M	SET SCREW M4-.7 X 10
164	XM1049164	SHAFT
167	XM1049167	KEYED BUSHING
168	XM1049168	GEAR 80T
169	XM1049169	RETAINING CLIP 9MM
170	XPLUBE001M	TAP-IN BALL OILER 6MM

REF	PART #	DESCRIPTION
171	XM1049171	GEAR 40T
172	XM1049172	GEAR 28T
173	XPSTB006M	STEEL BALL 4MM
174	XPCAP40	CAP SCREW 3/8-16 X 3-1/4
175	XPLUBE001	TAP-IN BALL OILER 1/4
701	XM1049701	3-JAW CHUCK BODY 4"
701-1	XM1049701-1	3-JAW REVERSE JAWS 3PC SET
701-2	XM1049701-2	3-JAW INTERNAL JAWS 3PC SET
702	XM1049702	4-JAW CHUCK 7"
703	XM1049703	FACEPLATE 7-1/2"
704	XM1049704	4-JAW CHUCK KEY
712	XM1049712	3-JAW CHUCK KEY
714	XM1049714	LIVE CENTER MT#2
715	XM1049715	DEAD CENTER MT#2
716	XM1049716	DEAD CENTER MT#3
720	XM1049720	SPINDLE LEVER
721	XM1049721	CHUCK LEVER

Quick-Change Gearbox

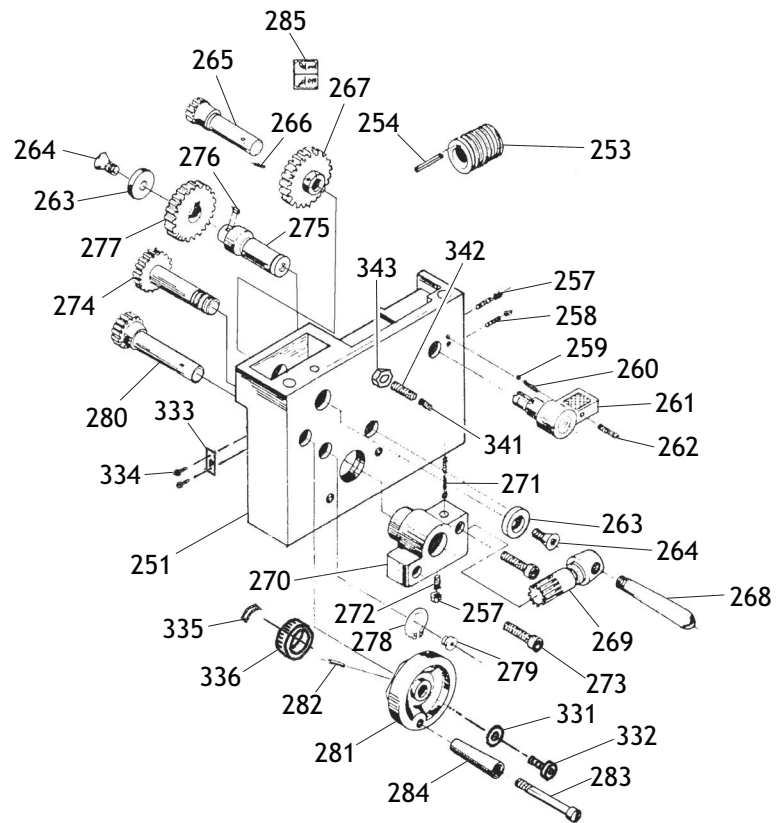


REF	PART #	DESCRIPTION
201	XM1049201	GEARBOX HOUSING
202	XM1049202	SHAFT
203	XPK13M	KEY 5 X 5 X 70
204	XM1049204	BUSHING
205	XM1049205	GEAR 28T
206	XM1049206	GEAR 26T
207	XM1049207	GEAR 24T
208	XM1049208	GEAR 23T
209	XM1049209	GEAR 22T
210	XM1049210	GEAR 20T
211	XM1049211	GEAR 19T
212	XM1049212	GEAR 18T
213	XM1049213	GEAR 16T
214	XM1049214	BUSHING
215	XPR06M	EXT RETAINING RING 16MM
216	XM1049216	SHAFT
217	XPK10M	KEY 5 X 5 X 12
218	XM1049218	GEAR 16T
219	XM1049219	SHIFT ARM
220	XM1049220	PIVOT PIN
221	XM1049221	GEAR 36T
222	XPSS05M	SET SCREW M5-.8 X 10
223	XPR05M	EXT RETAINING RING 15MM
224	XP6202ZZ	BALL BEARING 6202ZZ

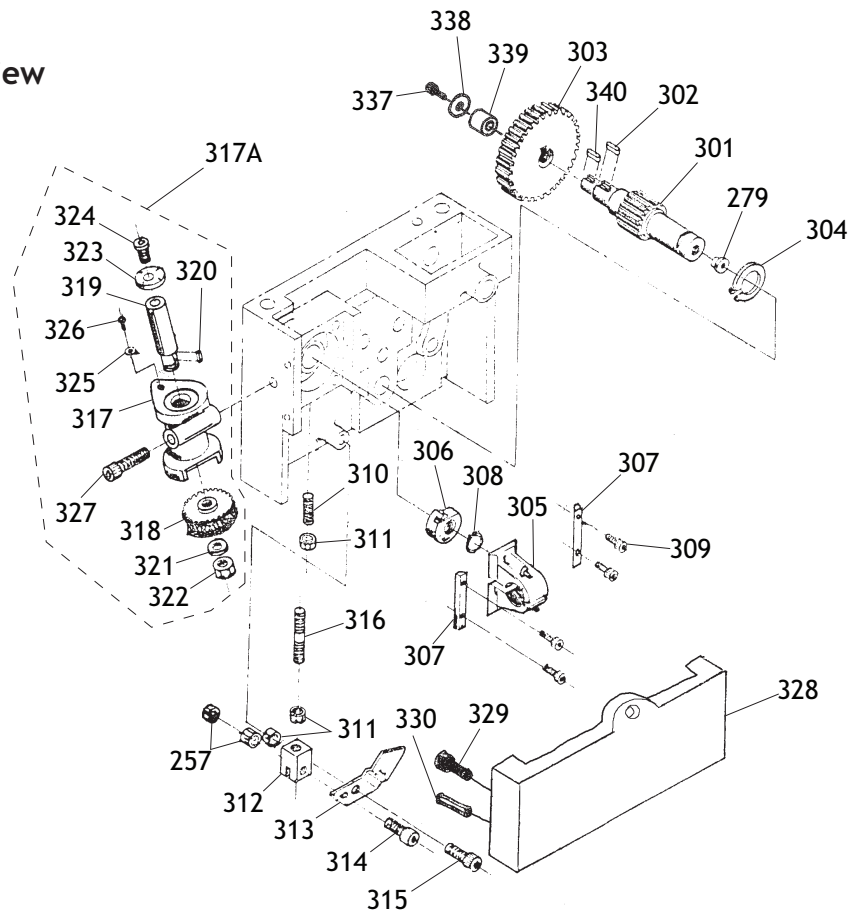
REF	PART #	DESCRIPTION
225	XM1049225	LOCATING PIN
226	XM1049226	COMPRESSION SPRING D9-3.5 X 37
227	XM1049227	BUSHING
228	XM1049228	KNURLED KNOB
229	XM1049229	ACORN NUT M6-1
230	XM1049230	GEARBOX FRONT COVER
231	XPCAP01M	CAP SCREW M6-1 X 16
232	XPRP20M	ROLL PIN 4 X 22
233	XM1049233	BRACKET
234	XPCAP04M	CAP SCREW M6-1 X 10
235	XPW04M	FLAT WASHER 10MM
236	XM1049236	BUSHING
237	XPRP18M	ROLL PIN 4 X 12
238	XM1049238	NUMBER PLATE
239	XPRIV003M	STEEL FLUTED RIVET 2 X 4MM
240	XPCAP14M	CAP SCREW M8-1.25 X 20
241	XPLW04M	LOCK WASHER 8MM
242	XM1049242	OIL CUP
243	XM1049243	BEARING CAP
244	XPNO1M	HEX NUT M6-1
245	XPSS49M	SET SCREW M4-.7 X 16
246	XPLUBE001M	TAP-IN BALL OILER 6MM
247	XPRP18M	ROLL PIN 4 X 12

Apron

Front View



Rear View

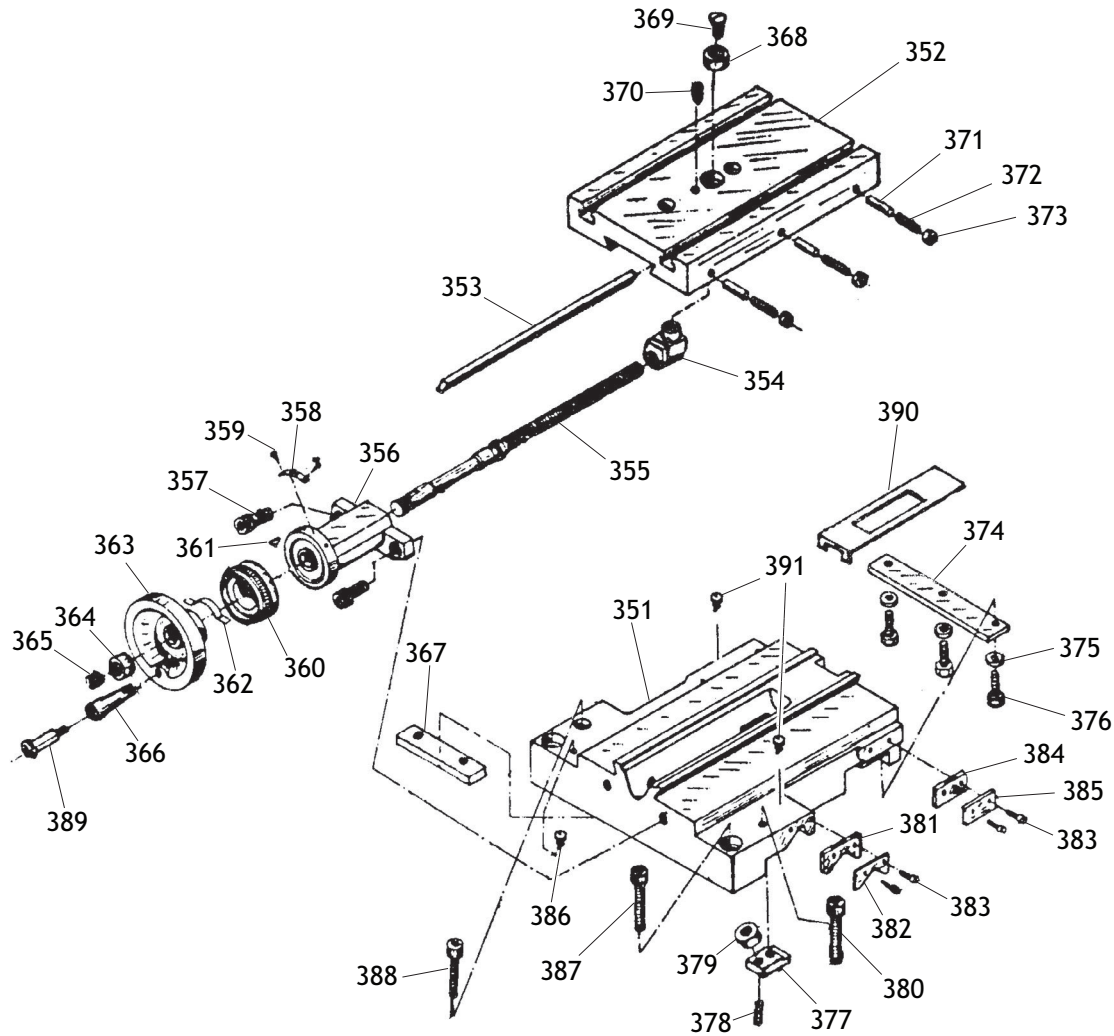


Apron Parts List

REF	PART #	DESCRIPTION
251	XM1049251	APRON CASTING
253	XM1049253	WORM
254	XPK52M	KEY 3 X 3 X 15
257	XPN04M	HEX NUT M4-.7
258	XPSS22M	SET SCREW M4-.7 X 12
259	XPSTB004M	STEEL BALL 5MM
260	XM1049260	COMPRESSION SPRING D4.8-1.5 X 16
261	XM1049261	HALF NUT LEVER
262	XPSS02M	SET SCREW M6-1 X 6
263	XPW03M	FLAT WASHER 6MM
264	XPFH04M	FLAT HD SCR M6-1.0 X 8
265	XM1049265	GEAR SHAFT 12T
266	XPRP22M	ROLL PIN 4 X 32
267	XM1049267	GEAR 43T
268	XM1049268	FEED LEVER
269	XM1049269	GEAR SHAFT 13T
270	XM1049270	BRACKET
271	XM1049271	COMPRESSION SPRING D4.8-1.5 X 13
272	XPSS23M	SET SCREW M4-.7 X 10
273	XPCAP07M	CAP SCREW M6-1 X 30
274	XM1049274	GEAR SHAFT 43T
275	XM1049275	SHAFT
276	XPK05M	KEY 4 X 4 X 10
277	XM1049277	GEAR 41T
278	XPR02M	EXT RETAINING RING 14MM
279	XPLUBE001M	TAP-IN BALL OILER 6MM
280	XM1049280	GEAR SHAFT 17T
281	XM1049281	HANDWHEEL
282	XPRP04M	ROLL PIN 4 X 24
283	XM1049283	HANDLE SCREW
284	XM1049284	HANDLE
285	XM1049285	LEVER DIRECTION LABEL
301	XM1049301	GEAR 18T
302	XPK05M	KEY 4 X 4 X 10
303	XM1049303	GEAR 42T
304	XPR03M	EXT RETAINING RING 12MM
305	XM1049305	HALF NUT
306	XM1049306	LOCKING CAM

REF	PART #	DESCRIPTION
307	XM1049307	HALF NUT GUIDE BAR
308	XPR39M	EXT RETAINING RING 8MM
309	XPCAP16M	CAP SCREW M4-.7 X 16
310	XPSS24M	SET SCREW M5-.8 X 25
311	XPN06M	HEX NUT M5-.8
312	XM1049312	CONTROL BLOCK
313	XM1049313	JOINT PLATE
314	XPCAP39M	CAP SCREW M4-.7 x 20
315	XPCAP24M	CAP SCREW M5-.8 X 16
316	XM1049316	THREAD DIAL BOLT
317A	XM1049317A	THREAD DIAL ASSEMBLY
317	XM1049317	THREAD DIAL BODY
318	XM1049318	WORM GEAR 64T
319	XM1049319	SHAFT
320	XPK39M	KEY 3 X 3 X 10
321	XPLW04M	LOCK WASHER 8MM
322	XPN03M	HEX NUT M8-1.25
323	XM1049323	THREAD DIAL
324	XM1049324	SHOULDER SCREW M6-1 X 10
325	XM1049325	POINTER
326	XPRIV003M	STEEL FLUTED RIVET 2 X 4MM
327	XPCAP189M	CAP SCREW M6-1 X 60
328	XM1049328	APRON REAR COVER
329	XPCAP33M	CAP SCREW M5-.8 X 12
330	XPRP02M	ROLL PIN 3 X 16
331	XPFH04M	HANDWHEEL FLAT WASHER
332	XM1049332	HANDWHEEL CAP SCREW
333	XM1049333	PLATE
334	XPRIV001M	STEEL FLUTED RIVET 2 X 5MM
335	XM1049335	INDEX PLATE
336	XM1049336	GRADUATED DIAL
337	XPCAP50M	CAP SCREW M5-.8 X 10
338	XPW02M	FLAT WASHER 5MM
339	XM1049339	BUSHING
340	XPK03M	KEY 3 X 3 X 8
341	XM1049341	THREADED BALL OILER
342	XM1049342	BALL OILER SET SCREW
343	XM1049343	BALL OILER THIN HEX NUT

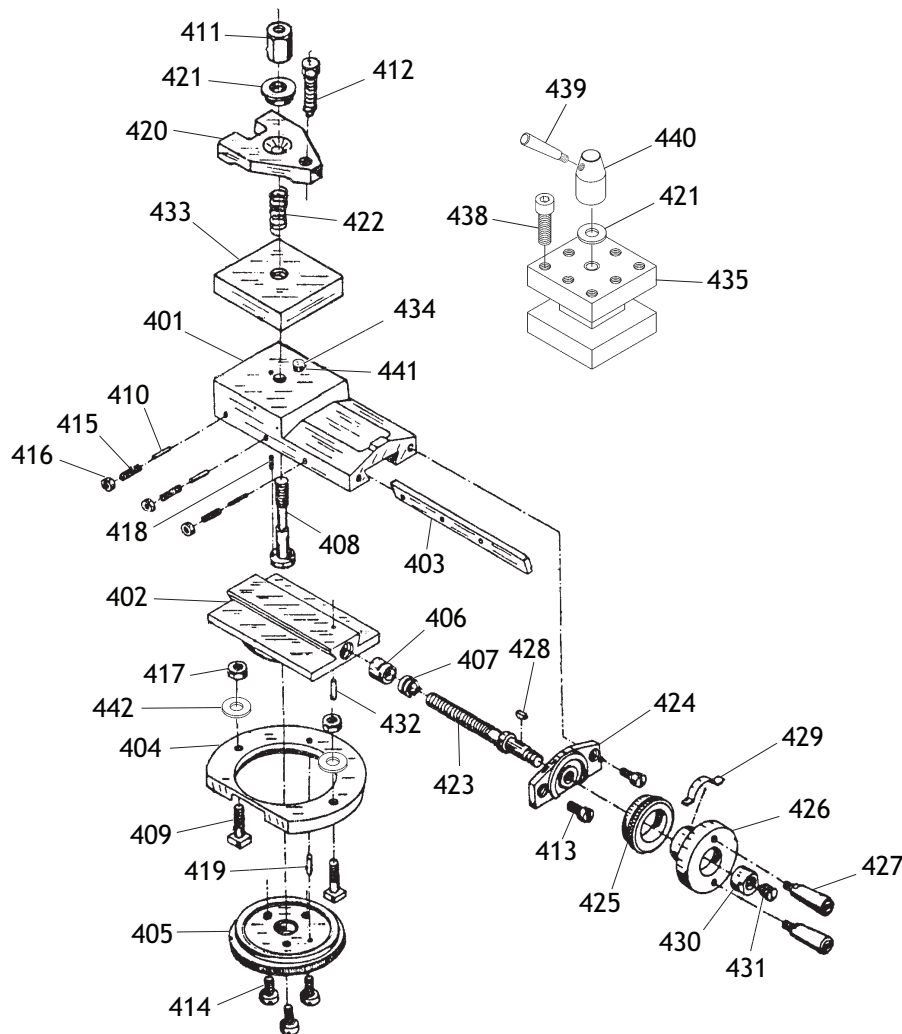
Saddle & Cross Slide



REF	PART #	DESCRIPTION
351	XM1049351	SADDLE
352	XM1049352	CROSS SLIDE
353	XM1049353	CROSS SLIDE GIB
354	XM1049354	CROSS SLIDE LEADSCREW NUT
355	XM1049355	CROSS SLIDE LEADSCREW
356	XM1049356	LEADSCREW BRACKET
357	XPCAP24M	CAP SCREW M5-.8 X 16
358	XM1049358	INDEX PLATE
359	XPRIV003M	STEEL FLUTED RIVET 2 X 4MM
360	XM1049360	GRADUATED DIAL
361	XPK10M	KEY 5 X 5 X 12
362	XM1049362	INDICATOR PLATE
363	XM1049363	HANDWHEEL
364	XM1049364	HANDWHEEL RETAINER
365	XPSS17M	SET SCREW M8-1.25 X 6
366	XM1049366	HANDLE
367	XM1049367	SLIDE BLOCK
368	XM1049368	BUSHING
369	XPFH02M	FLAT HD SCR M6-1 X 12
370	XPSS04M	SET SCREW M6-1 X 12
371	XM1049371	GIB PIN 3 X 24

REF	PART #	DESCRIPTION
372	XPSS22M	SET SCREW M4-.7 X 12
373	XPNO4M	HEX NUT M4-.7
374	XM1049374	SADDLE GIB CLAMP
375	XPW03M	FLAT WASHER 6MM
376	XPCAP01M	CAP SCREW M6-1 X 16
377	XM1049377	CLAMP BLOCK
378	XPSS25M	SET SCREW M6-1 X 20
379	XPNO1M	HEX NUT M6-1
380	XPCAP06M	CAP SCREW M6-1 X 25
381	XM1049381	V-WAY WIPER
382	XM1049382	V-WAY WIPER PLATE
383	XPS17M	PHLP HD SCR M4-.7 X 6
384	XM1049384	STRAIGHT WAY WIPER
385	XM1049385	STRAIGHT WAY WIPER PLATE
386	XM1049386	OIL PORT 6MM
387	XPCAP13M	CAP SCREW M8-1.25 X 30
388	XPCAP06M	CAP SCREW M6-1 X 25
389	XM1049389	HANDLE CAP SCREW
390	XM1049390	CHIP GUARD
391	XPLUBE001M	TAP-IN BALL OILER 6MM

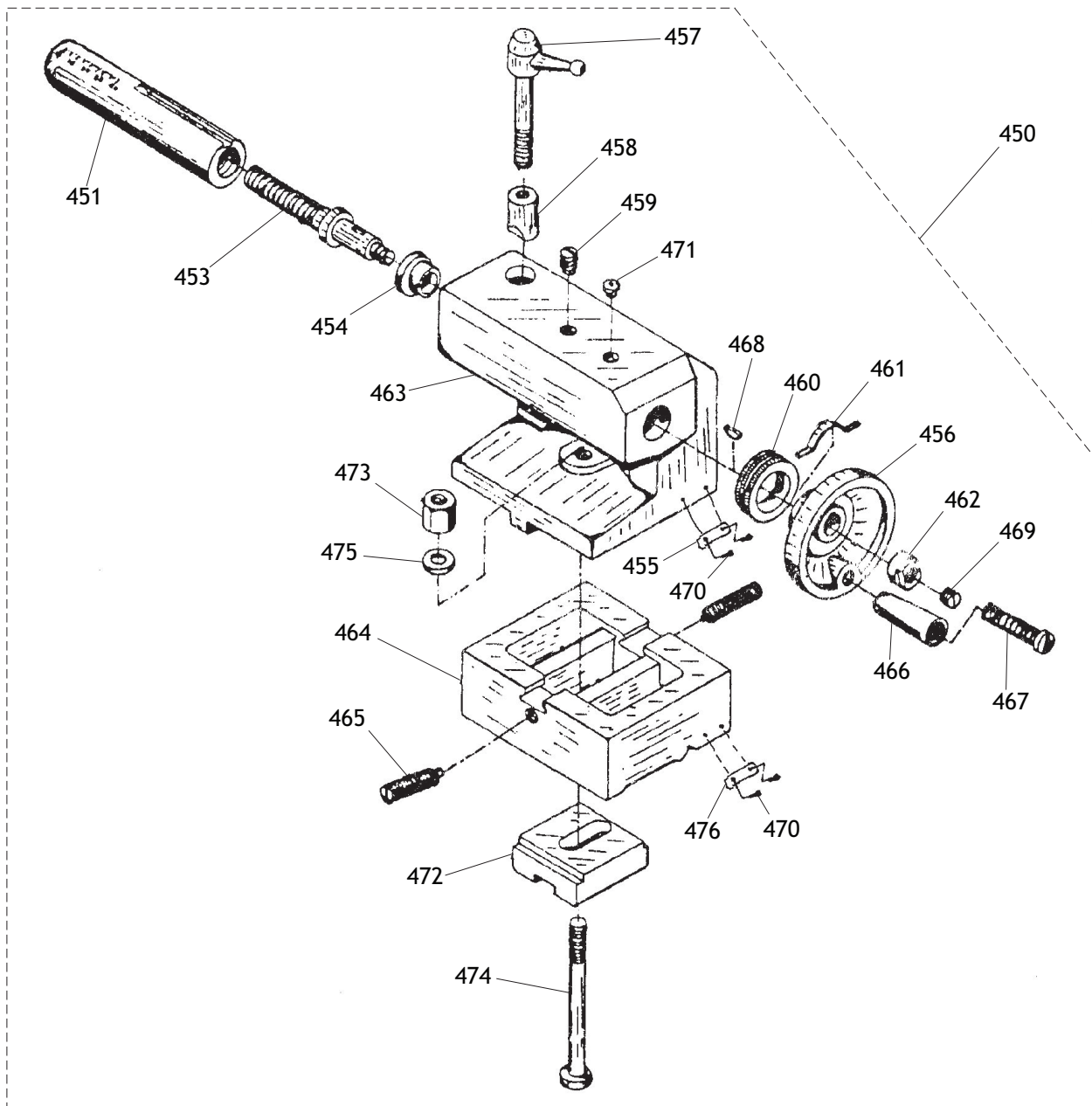
Compound Rest & Tool Post



REF	PART #	DESCRIPTION
401	XM1049401	COMPOUND REST BODY
402	XM1049402	SWIVEL BASE
403	XM1049403	COMPOUND REST GIB
404	XM1049404	CLAMPING RING
405	XM1049405	GRADUATED DIAL
406	XM1049406	COMPOUND REST LEADSCREW NUT
407	XM1049407	ADJUSTING SCREW
408	XM1049408	TOOL POST BOLT
409	XM1049409	CLAMPING RING T-BOLT
410	XM1049410	GIB PIN
411	XM1049411	TOOL POST NUT
412	XPB26M	HEX BOLT M8-1.25 X 30
413	XPCAP50M	CAP SCREW M5-.8 X 10
414	XPFH02M	FLAT HD SCR M6-1 X 12
415	XPSS23M	SET SCREW M4-.7 X 10
416	XPN04M	HEX NUT M4-.7
417	XPN01M	HEX NUT M6-1
418	XPRP15M	ROLL PIN 3 X 8
419	XPRP37M	ROLL PIN 3 X 14
420	XM1049420	C-STYLE TOOL CLAMP

REF	PART #	DESCRIPTION
421	XPW01M	FLAT WASHER 8MM
422	XM1049422	COMPRESSION SPRING D13.5-5.5 X 36
423	XM1049423	LEADSCREW
424	XM1049424	LEADSCREW MOUNT
425	XM1049425	GRADUATED DIAL
426	XM1049426	HANDWHEEL
427	XM1049427	HANDLE
428	XPK39M	KEY 3 X 3 X 10
429	XM1049429	INDEX PLATE
430	XM1049430	COLLAR
431	XPSS17M	SET SCREW M8-1.25 X 6
432	XPRP61M	ROLL PIN 3 X 12
433	XM1049433	C-STYLE TOOL BASE
434	XM1049434	TOOL POST PIN
435	XM1049435	4-WAY TOOL POST BODY
438	XPCAP13M	CAP SCREW M8-1.25 X 30
439	XM1049439	LOCK HANDLE
440	XM1049440	TOOL POST LOCK NUT
441	XM1049441	TOOL POST PIN SPRING
442	XPW03M	FLAT WASHER 6MM

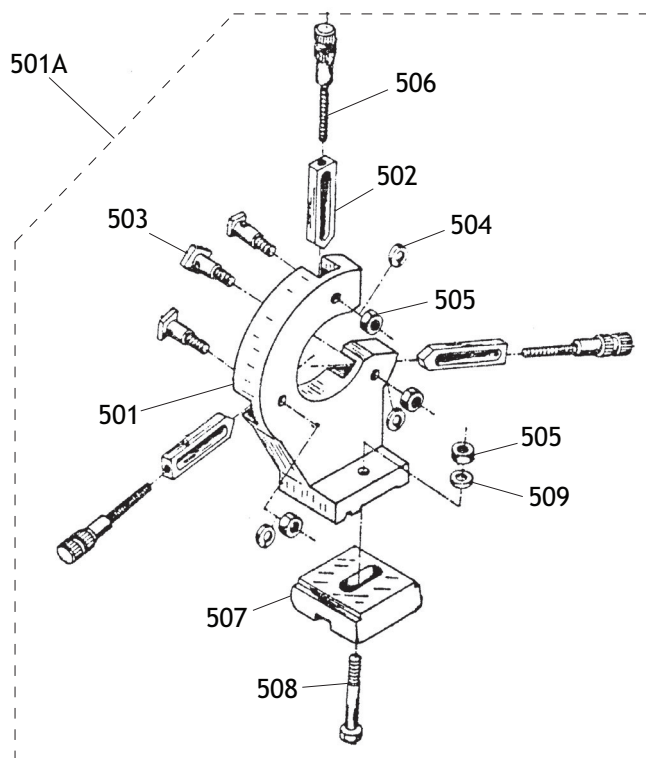
Tailstock



REF	PART #	DESCRIPTION
450	XM1049450	COMPLETE TAILSTOCK ASSEMBLY
451	XM1049451	QUILL
453	XM1049453	LEADSCREW
454	XM1049454	BUSHING
455	XM1049455	UPPER OFFSET PLATE
456	XM1049456	HANDWHEEL
457	XM1049457	QUILL LOCK LEVER
458	XM1049458	QUILL LOCK PLUNGER
459	XPSS05M	SET SCREW M5-.8 X 10
460	XM1049460	GRADUATED DIAL
461	XM1049461	INDEX PLATE
462	XPN03M	HEX NUT M8-1.25
463	XM1049463	TAILSTOCK BODY

REF	PART #	DESCRIPTION
464	XM1049464	TAILSTOCK BASE
465	XM1049465	DOG-POINT SET SCREW M8-1.25 X 25
466	XM1049466	HANDLE
467	XM1049467	HANDLE SCREW
468	XPB39M	KEY 3 X 3 X 10
469	XPSS20M	SET SCREW M8-1.25 X 8
470	XPRIV001M	STEEL FLUTED RIVET 2 X 5MM
471	XPLUBE001M	TAP-IN BALL OILER 6MM
472	XM1049472	CLAMPING PLATE
473	XPB03M	HEX NUT M8-1.25
474	XPB124M	HEX BOLT M8-1.25 X 90
475	XPW01M	FLAT WASHER 8MM
476	XM1049476	LOWER OFFSET PLATE

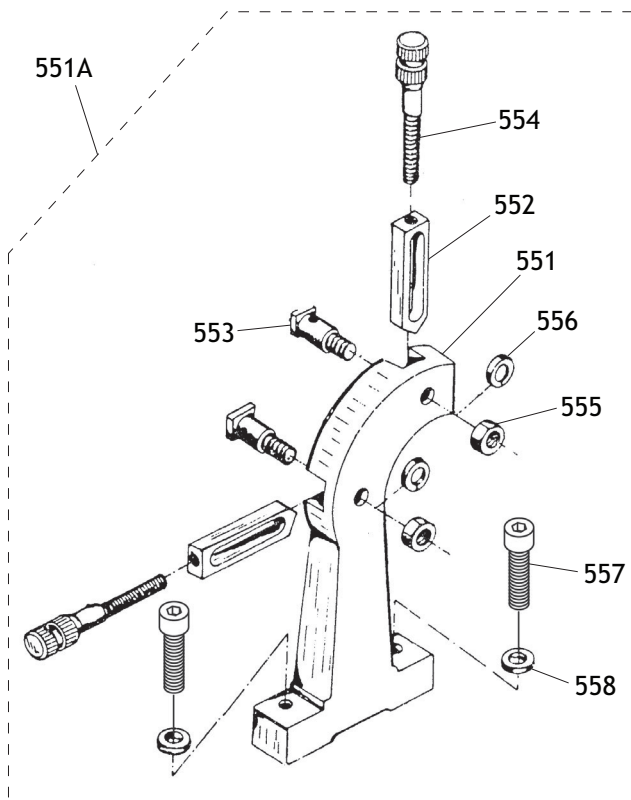
Steady Rest



REF	PART #	DESCRIPTION
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501A	XM1049501A	STEADY REST ASSEMBLY
501	XM1049501	STEADY REST BODY
502	XM1049502	STEADY REST FINGER
503	XM1049503	STEPPED T-BOLT
504	XPLW04M	LOCK WASHER 8MM
505	XPN03M	HEX NUT M8-1.25
506	XM1049506	ADJUSTMENT SCREW
507	XM1049507	CLAMPING PLATE
508	XPB28M	HEX BOLT M8-1.25 X 60
509	XPW01M	FLAT WASHER 8MM

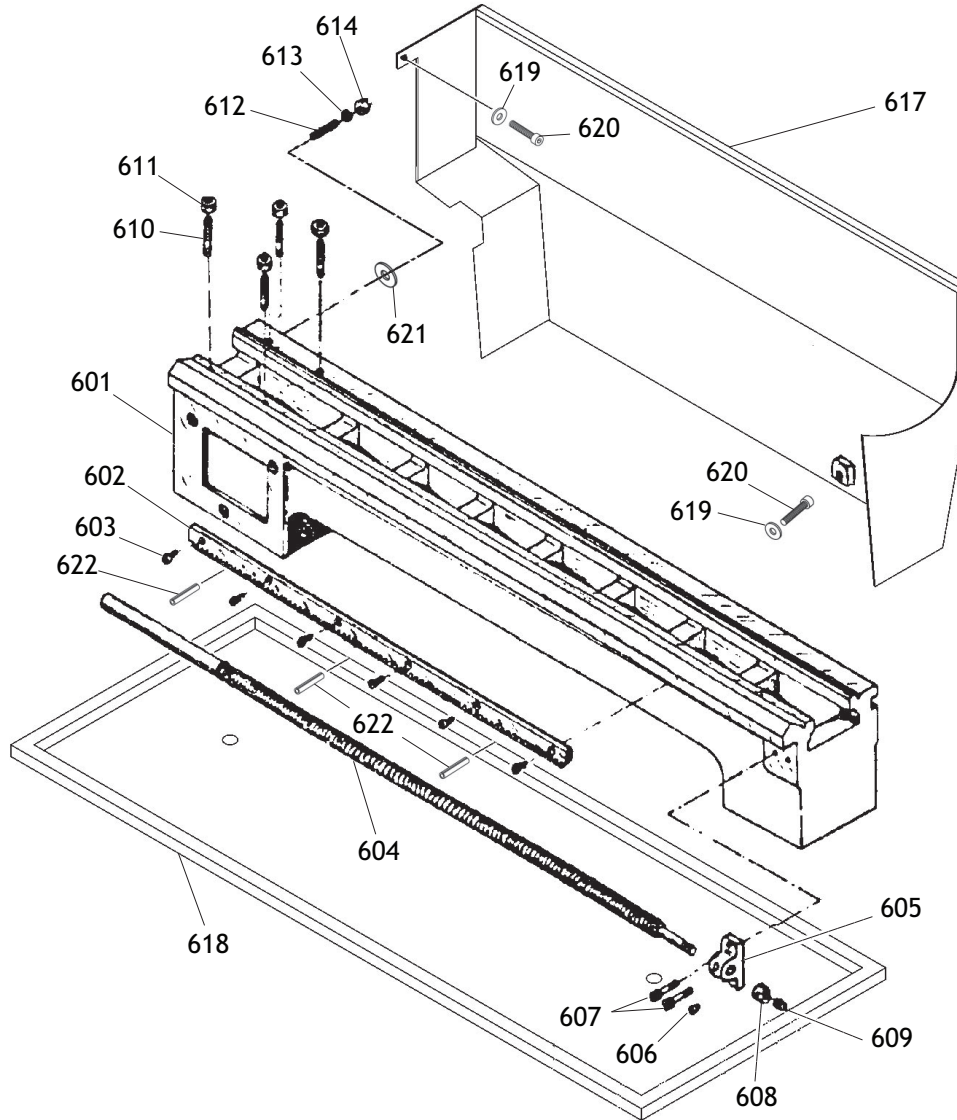
Follow Rest



REF	PART #	DESCRIPTION
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551A	XM1049551A	FOLLOW REST ASSEMBLY
551	XM1049551	FOLLOW REST BODY
552	XM1049502	FOLLOW REST FINGER
553	XM1049503	STEPPED T-BOLT
554	XM1049506	ADJUSTMENT SCREW
555	XPN03M	HEX NUT M8-1.25
556	XPW01M	FLAT WASHER 8MM
557	XPCAP07M	CAP SCREW M6-1 X 30
558	XPW03M	FLAT WASHER 6MM

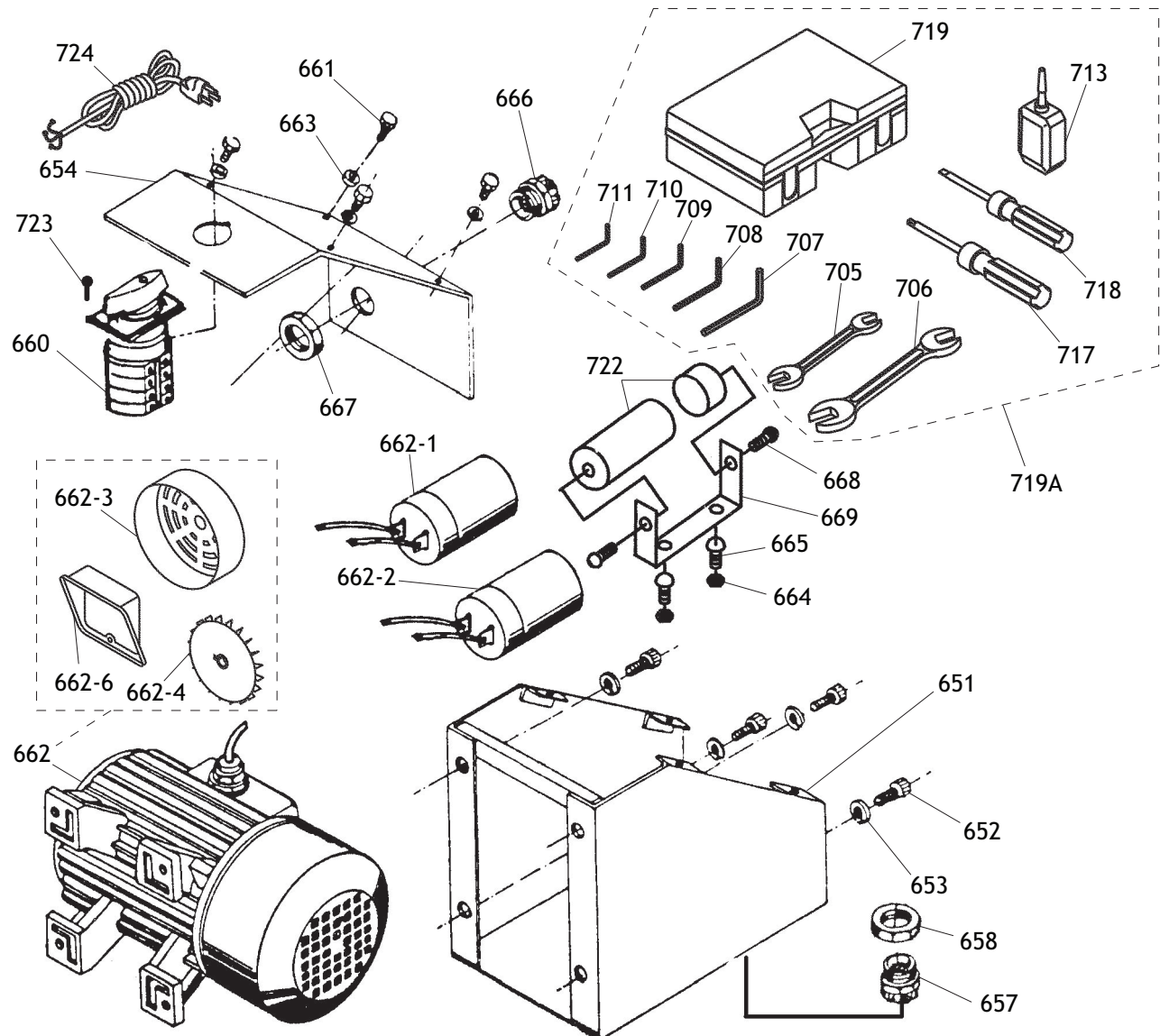
Bed



REF	PART #	DESCRIPTION
601	XM1049601	BED
602	XM1049602	RACK
603	XPCAP18M	CAP SCREW M4-.7 X 8
604	XM1049604	LONGITUDINAL LEADSCREW
605	XM1049605	BRACKET
606	XPLUBE001M	TAP-IN BALL OILER 6MM
607	XPCAP02M	CAP SCREW M6-1 X 20
608	XPN03M	HEX NUT M8-1.25
609	XPSS17M	SET SCREW M8-1.25 X 6
610	XM1049610	GAP STUD-DE M8-1.25 X 28

REF	PART #	DESCRIPTION
611	XPN03M	HEX NUT M8-1.25
612	XPSS12M	SET SCREW M6-1 X 25
613	XPW03M	FLAT WASHER 6MM
614	XPN01M	HEX NUT M6-1
617	XM1049617	SPLASH PAN
618	XM1049618	CHIP TRAY
619	XPW02M	FLAT WASHER 5MM
620	XPCAP50M	CAP SCREW M5-.8 X 10
621	XPWF06M	FENDER WASHER 6MM
622	XPRP76M	ROLL PIN 4 X 16

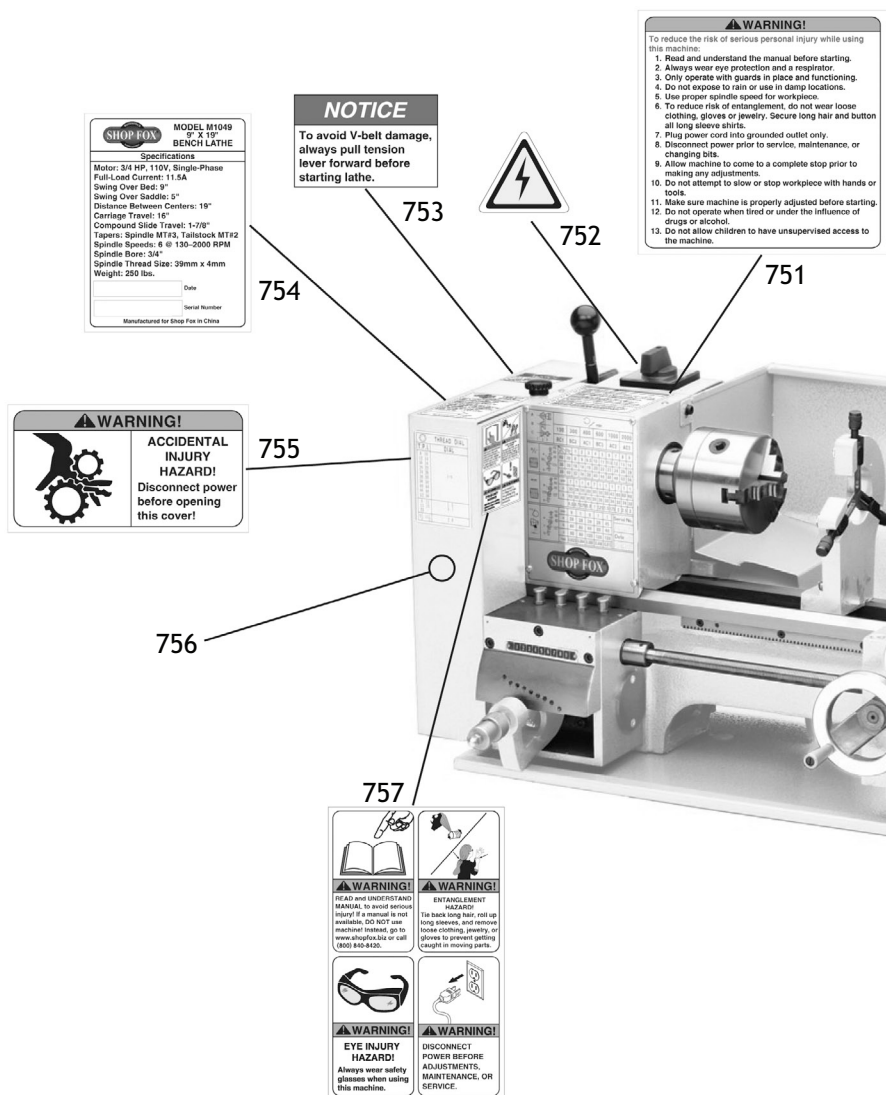
Electrical & Tools



REF	PART #	DESCRIPTION
651	XM1049651	ELECTRICAL CABINET
652	XPCAP50M	CAP SCREW M5-.8 X 10
653	XPLW01	LOCK WASHER 5/16
654	XM1049654	ELECTRICAL CABINET COVER
657	XM1049657	STRAIN RELIEF NUT M24-1.5
658	XM1049658	STRAIN RELIEF M24-1.5
660	XM1049660	ROTARY SWITCH 20A
661	XPS09M	PHLP HD SCR M5-.8 x 10
662	XM1049662	MOTOR 3/4HP 110V 60HZ
662-1	XM1049662-1	R CAPACITOR 20M 400V 1-5/8 X 2-7/8
662-2	XM1049662-2	S CAPACITOR 100M 250V 1-5/8 X 3-1/8
662-3	XM1049662-3	MOTOR FAN COVER
662-4	XM1049662-4	MOTOR FAN
662-6	XM1049662-6	MOTOR JUNCTION BOX
663	XPLW01M	LOCK WASHER 5MM
664	XPN04M	HEX NUT M4-.7
665	XPS07M	PHLP HD SCR M4-.7 X 8
666	XM1049666	STRAIN RELIEF M16

REF	PART #	DESCRIPTION
667	XM1049667	STRAIN RELIEF NUT M16-1
668	XPS09M	PHLP HD SCR M4-.7 X 6
669	XM1049669	CAPACITOR CLIP
705	XPWR810	COMBO WRENCH 8/10MM
706	XPWR1214	WRENCH 12 X 14
707	XPAW06M	HEX WRENCH 6MM
708	XPAW05M	HEX WRENCH 5MM
709	XPAW04M	HEX WRENCH 4MM
710	XPAW03M	HEX WRENCH 3MM
711	XPAW02M	HEX WRENCH 2MM
713	XM1049713	BOTTLE FOR OIL
717	XPSDP2	PHILLIPS SCREWDRIVER #2
718	XPSDF2	STANDARD SCREWDRIVER
719A	XM1049719A	TOOLBOX W/TOOLS
719	XM1049719	TOOLBOX
722	XM1049722	CAPACITOR COVER W/CAP
723	XPS56M	PHLP HD SCR M4-.7 X 16
724	XM1049724	POWER CORD 16G 3C 110V 5-15

Machine Labels



REF	PART #	DESCRIPTION
751	XM1049751	WARNINGS LABEL
752	XLABEL-04	ELECTRICITY LABEL
753	XM1049753	TENSION LEVER NOTICE LABEL
754	XM1049754	MACHINE ID LABEL

REF	PART #	DESCRIPTION
755	XM1049755	PINCH HAZARD LABEL
756	XPPAINT-1	SHOP FOX WHITE TOUCH-UP PAINT
757	XM1049757	GROUPED WARNINGS LABEL

! WARNING

Safety labels warn about machine hazards and how to prevent machine damage or injury. The owner of this machine **MUST** maintain the original location and readability of all labels on this machine. If any label is removed or becomes unreadable, **REPLACE** that label before allowing the machine to enter service again. Contact Woodstock International, Inc. at (360) 734-3482 or www.shopfoxtools.com to order new labels.

Warranty Registration

Name _____
Street _____
City _____ State _____ Zip _____
Phone # _____ Email _____ Invoice # _____
Model # _____ Serial # _____ Dealer Name _____ Purchase Date _____

The following information is given on a voluntary basis. It will be used for marketing purposes to help us develop better products and services. Of course, all information is strictly confidential.

1. How did you learn about us?

_____ Advertisement _____ Friend _____ Local Store
_____ Mail Order Catalog _____ Website _____ Other:

2. How long have you been a woodworker/metalworker?

_____ 0-2 Years _____ 2-8 Years _____ 8-20 Years _____ 20+ Years

3. How many of your machines or tools are Shop Fox?

_____ 0-2 _____ 3-5 _____ 6-9 _____ 10+

4. Do you think your machine represents a good value?

_____ Yes _____ No

5. Would you recommend Shop Fox products to a friend?

_____ Yes _____ No

6. What is your age group?

_____ 20-29 _____ 30-39 _____ 40-49
_____ 50-59 _____ 60-69 _____ 70+

7. What is your annual household income?

_____ \$20,000-\$29,000 _____ \$30,000-\$39,000 _____ \$40,000-\$49,000
_____ \$50,000-\$59,000 _____ \$60,000-\$69,000 _____ \$70,000+

8. Which of the following magazines do you subscribe to?

_____ Cabinet Maker	_____ Popular Mechanics	_____ Today's Homeowner
_____ Family Handyman	_____ Popular Science	_____ Wood
_____ Hand Loader	_____ Popular Woodworking	_____ Wooden Boat
_____ Handy	_____ Practical Homeowner	_____ Woodshop News
_____ Home Shop Machinist	_____ Precision Shooter	_____ Woodsmith
_____ Journal of Light Cont.	_____ Projects in Metal	_____ Woodwork
_____ Live Steam	_____ RC Modeler	_____ Woodworker West
_____ Model Airplane News	_____ Rifle	_____ Woodworker's Journal
_____ Modeltec	_____ Shop Notes	_____ Other:
_____ Old House Journal	_____ Shotgun News	

9. Comments: _____

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FOLD ALONG DOTTED LINE

TAPE ALONG EDGES--PLEASE DO NOT STAPLE

WARRANTY

Woodstock International, Inc. warrants all Shop Fox machinery to be free of defects from workmanship and materials for a period of two years from the date of original purchase by the original owner. This warranty does not apply to defects due directly or indirectly to misuse, abuse, negligence or accidents, lack of maintenance, or reimbursement of third party expenses incurred.

Woodstock International, Inc. will repair or replace, at its expense and at its option, the Shop Fox machine or machine part, which in normal use has proven to be defective, provided that the original owner returns the product prepaid to a Shop Fox factory service center with proof of their purchase of the product within two years, and provides Woodstock International, Inc. reasonable opportunity to verify the alleged defect through inspection. If it is determined there is no defect, or that the defect resulted from causes not within the scope of Woodstock International Inc.'s warranty, then the original owner must bear the cost of storing and returning the product.

This is Woodstock International, Inc.'s sole written warranty and any and all warranties that may be implied by law, including any merchantability or fitness, for any particular purpose, are hereby limited to the duration of this written warranty. We do not warrant that Shop Fox machinery complies with the provisions of any law or acts. In no event shall Woodstock International, Inc.'s liability under this warranty exceed the purchase price paid for the product, and any legal actions brought against Woodstock International, Inc. shall be tried in the State of Washington, County of Whatcom. We shall in no event be liable for death, injuries to persons or property or for incidental, contingent, special or consequential damages arising from the use of our products.

Every effort has been made to ensure that all Shop Fox machinery meets high quality and durability standards. We reserve the right to change specifications at any time because of our commitment to continuously improve the quality of our products.



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